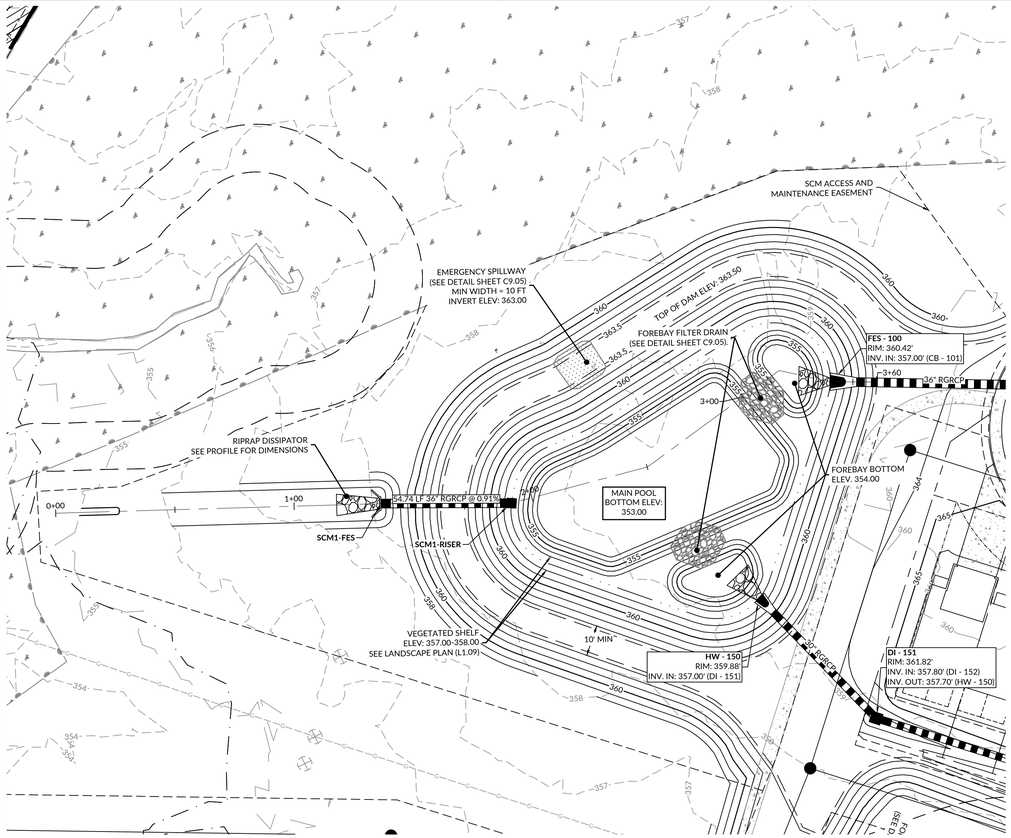
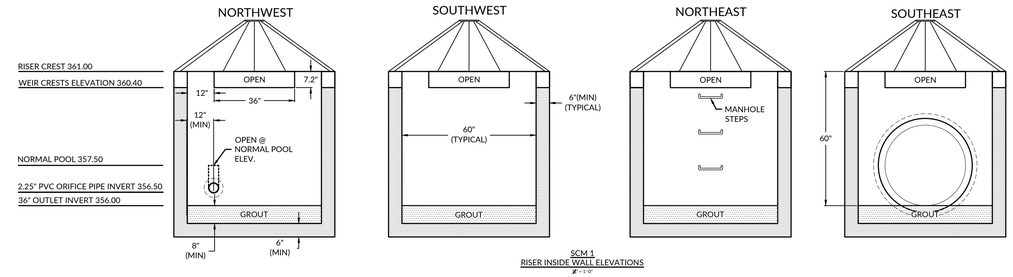
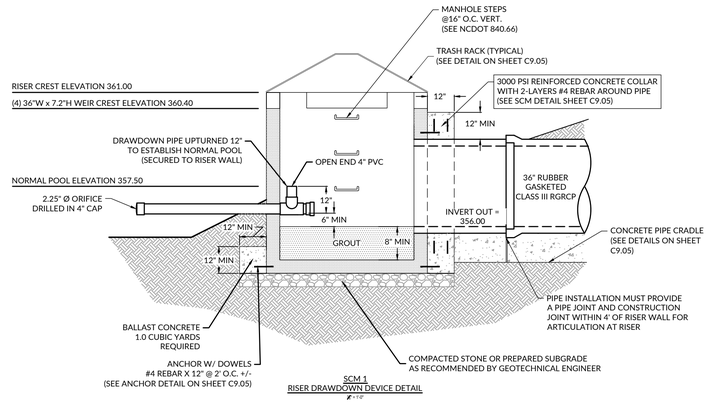


WET POND SCM #1 PLAN VIEW

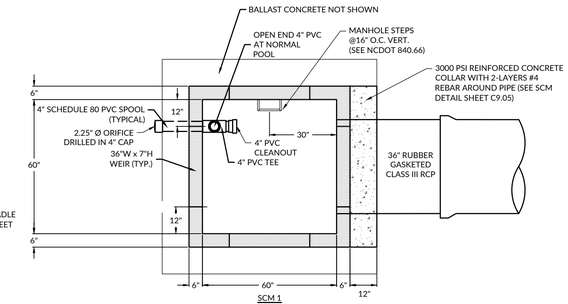
SCALE: 1" = 30'



SCM 1
RISER INSIDE WALL ELEVATIONS
X" = 1'-0"

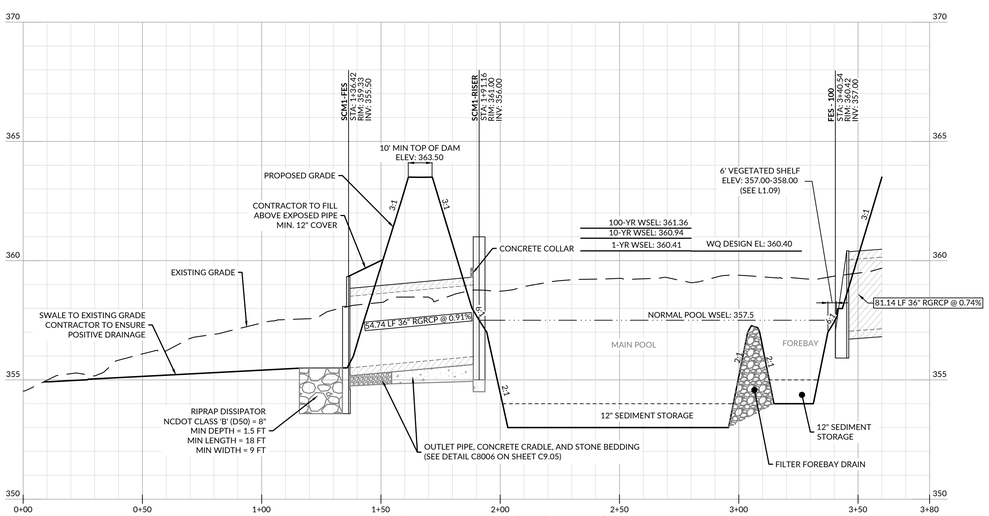


SCM 1
RISER DRAWDOWN DEVICE DETAIL
X" = 1'-0"



SCM 1
RISER DRAWDOWN DEVICE PLAN
X" = 1'-0"

NOTE:
RISER AND BALLAST CONCRETE HAVE BEEN SIZED BASED ON BUOYANCY CALCULATIONS. ADJUSTMENTS TO CONCRETE DIMENSIONS ARE NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL. ANY DIMENSIONAL CHANGES TO BALLAST CONCRETE BASE AND RISER MUST BE REQUESTED IN WRITING AND MUST BE ACCOMPANIED BY BUOYANCY CALCULATIONS SIGNED AND SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.



WET POND SCM #1 PROFILE VIEW

SCALE: 1" = 30' HORIZONTAL, 1" = 3' VERTICAL

WET POND STORMWATER CONTROL MEASURE (SCM) GENERAL NOTES:

1. PRIOR TO OR DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE PLANS OR SPECIFICATIONS.
2. ALL CONSTRUCTION AND MINIMUM DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL STANDARDS AND SPECIFICATIONS, HEREBY INCORPORATED BY REFERENCE.
3. UPON COMPLETION OF CONSTRUCTION, CERTIFICATION OF THE SCM BY THE GEOTECHNICAL ENGINEER WILL BE REQUIRED PRIOR TO FINAL SCM ACCEPTANCE.
4. THE GEOTECHNICAL ENGINEER SHALL EVALUATE SOILS FOR SUITABILITY OF DAM CONSTRUCTION AND SLOPE STABILITY.
5. PRIOR TO PLACEMENT OF EMBANKMENT FILL, THE GEOTECHNICAL ENGINEER SHALL SUPERVISE THE FOUNDATION PREPARATION AND APPROVE THE DEPTH AND EXTENT OF THE CUTOFF TRENCH, A MINIMUM OF 1 FOOT SHALL BE EXCAVATED.
6. THE DAM AND FOREBAY BERMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS UNLESS SUPERCEDED BY THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
   - BORROW MATERIALS FOR USE AS EMBANKMENT FILL SHALL BE FREE OF ORGANICS, ROOTS AND OTHER WOODY VEGETATION OR ORGANIC DEBRIS.
   - FILL MATERIALS SHALL CONSIST OF SOILS WHICH CLASSIFY AS SC, SM, CL, CL-CH AND ML IN ACCORDANCE WITH THE UNIFIED CLASSIFICATION SYSTEM OR AS APPROVED BY THE GEOTECHNICAL ENGINEER.
   - FILL MATERIALS SHALL HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES IN MEAN DIAMETER.
   - FILL SHALL BE PLACED IN 8 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT AND IN 4 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HAND OPERATED TAMPERS UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE. FILL SHALL BE BROUGHT UP BY BENCHING INTO THE EXISTING SLOPE. A MAXIMUM HEIGHT OF 2 FEET SHALL BE USED FOR EACH BENCH LIFT TAKING CARE TO REMOVE ROOT STRUCTURES AS THE FILL PROCEEDS. THE SURFACE OF EACH LIFT SHALL BE SCARIFIED PRIOR TO PLACEMENT OF THE NEXT LIFT IN ORDER TO EFFECTIVELY TIE THE FILL LIFTS TOGETHER.
   - ALL COMPACTION SHALL BE TESTED BY THE NUCLEAR METHOD (ASTM D-6938) OR SAND CONE METHOD (ASTM D-1556) AT A RATE OF AT LEAST ONE TEST PER 5,000 SF PER ONE FOOT OF COMPACTED FILL THICKNESS IN GENERAL AREA FILLS AND ONE TEST PER 50 LINEAL FEET PER LIFT ALONG THE BARREL.
   - THE MINIMUM COMPACTION SHALL BE A MINIMUM OF 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698) AT MOISTURE CONTENTS VARYING FROM 2 PERCENT BELOW TO 3 PERCENT ABOVE OPTIMUM MOISTURE CONTENT DETERMINED BY STANDARD PROCTOR TEST.
7. SUBGRADE FOR THE RISER STRUCTURE AND OUTLET PIPE SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.IF THE GEOTECHNICAL ENGINEER REQUIRES ADDITIONAL SUBGRADE PREPARATION, THE ADDITIONAL COST SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.
8. THE OUTLET PIPE SHALL BE BEDDED IN CONCRETE FOR 2/3 OF THE PIPE LENGTH, BEGINNING AT THE RISER, AND IN #78 STONE FOR 1/3 OF PIPE LENGTH TO THE OUTLET. SEE DETAILS ON SHEET C9.05.
9. EMBANKMENT AND SIDE SLOPES OF THE BASIN SHALL BE STABILIZED PER SEEDING SCHEDULE ON EROSION CONTROL DETAILS SHEET OR SODDED. SEE LANDSCAPE PLAN ON SHEETS FOR FURTHER PLANTING DETAILS.
10. IF, DURING CONSTRUCTION, THE SCM IS TO BE USED AS AN EROSION CONTROL MEASURE, THE FOREBAY BERM(S) SHALL NOT BE INSTALLED DURING THE INITIAL CONSTRUCTION OR WHILE THE SCM IS USED AS AN EROSION CONTROL MEASURE.
11. UNLESS OTHERWISE NOTED, ALL PERMANENT STRUCTURES (e.g. RISER/BARREL, WEIR WALLS, ETC.) ARE TO BE INSTALLED WITH THE INITIAL DAM CONSTRUCTION.
12. FOR SITE BUILT FEATURES (e.g. WEIR WALLS, DROP STRUCTURES, BRIDGES, ETC.), THE CONTRACTOR SHALL PROVIDE STRUCTURAL DRAWINGS TO BE SIGNED AND SEALED BY A NC PROFESSIONAL ENGINEER AND TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
13. PRIOR TO FINAL GRADING OF THE SCM, THE CONTRACTOR SHALL PROVIDE SUFFICIENT AS-BUILT SURVEY INFORMATION TO CONFIRM THAT THE FINISHED SCM WILL MEET THE SPECIFIC DIMENSIONAL REQUIREMENTS APPLICABLE TO THE SCM. THOSE REQUIREMENTS INCLUDE:
   - POND BOTTOM ELEVATION = 353.00 FT
   - DRAWDOWN OVERFLOW ELEVATION (NORMAL POOL) = 357.50 FT
   - MINIMUM SURFACE AREA AT NORMAL POOL ELEVATION = 10,410 SF
   - MINIMUM VOLUME REQUIRED FOR WATER QUALITY = 15,262 CF
   - PROVIDED VOLUME FOR WATER QUALITY = 37,342 CF
   - WEIR CREST ELEVATION = 360.40 FT
   - RISER CREST ELEVATION= 361.00 FT
   - LOW POINT TOP OF EMBANKMENT (AUXILIARY SPILLWAY) = 363.00 FT
   - AVERAGE TOP OF EMBANKMENT = 363.50 FT
15. ELEVATIONS SHALL BE WITHIN 0.1 FEET OF THE ABOVE ELEVATIONS FOR EARTHWORK, AND 0.05 FEET FOR OUTLET STRUCTURE. ALL SURFACE AREAS ARE THE MINIMUM AREAS. REQUEST FOR A REDUCTIONS IN THE MINIMUM VALUES WILL BE CONSIDERED ON A CASE BY CASE BASIS.
16. ONCE THE PROJECT SITE HAS BEEN STABILIZED, CONTRACTOR SHALL OBTAIN APPROVAL BY EROSION CONTROL INSPECTOR IN ORDER TO REMOVE TEMPORARY EROSION CONTROL DEVICES.
   - ONCE ALL SEDIMENT AND EROSION CONTROL DEVICES HAVE BEEN REMOVED, THE SCM SHALL BE CONVERTED TO A PERMANENT SCM.
   - ALL SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
   - FOREBAY AND VEGETATED SHELF SHALL BE CONSTRUCTED AS SHOWN ON THE PLAN.
   - VEGETATED SHELF SHALL BE PLANTED PER PLANT SCHEDULE ON LANDSCAPE PLAN (SEE L1.09).
17. FINAL CERTIFICATION OF THE SCM BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED IS REQUIRED.

CLAY LINER SPECIFICATIONS:

THE CONTRACTOR SHALL INSTALL A CLAY LINER TO MAINTAIN A PERMANENT POOL AT THE DESIGN ELEVATION. IF THE SITE GEOTECHNICAL ENGINEER DETERMINES THAT THE EXISTING SITE CONDITIONS (SOIL PROPERTIES, EXISTING WATER TABLE, ETC.) INDICATE THAT NORMAL POOL CAN BE MAINTAINED WITHOUT A CLAY LINER, THE GEOTECHNICAL ENGINEER WILL PROVIDE NOTICE IN WRITING TO THE PROJECT ENGINEER THAT THE CLAY LINER IS NOT REQUIRED. IF THE CLAY LINER IS NOT INSTALLED, THE OWNER SHALL RECEIVE A CREDIT FOR THE DELETION OF THE LINER.

AT A MINIMUM, THE CLAY LINER MATERIAL FOR THE WET POND SHALL MEET THE FOLLOWING SPECIFICATIONS:

- UNIFIED SOIL CLASSIFICATION SYSTEM DESIGNATION OF CL, CH, ML, OR SC
- MINIMUM OF 40% PASSING #200 SIEVE
- MINIMUM PLASTICITY INDEX OF 12
- MAXIMUM PERMEABILITY OF 1 X 10^{-5} cm/sec
- A MINIMUM OF 2 TESTS OF EACH ABOVE PARAMETER SHALL BE PROVIDED FROM AN APPROVED LABORATORY ON THE LINER MATERIAL AND PRESENTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.
- COMPACTION TO A MINIMUM OF 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698), AND WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT (MINIMUM OF 1 COMPACTION DENSITY TEST PER 2500 SQUARE FEET).
- AN IN-PLACE MAXIMUM INFILTRATION RATE OF 0.01 INCHES PER HOUR.
- RECOMMENDATIONS OF THE SITE GEOTECHNICAL ENGINEER MAY SUPERCEDE THE ABOVE SPECIFICATIONS.

THE CLAY LINER SHALL BE PLACED UNDER THE BOTTOM OF THE SCM PERMANENT POOL TO A MINIMUM THICKNESS OF 8 INCHES. A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE PLACED ABOVE THE CLAY LINER TO THE FINISHED GRADE AS SHOWN ON THE DRAWINGS AND/OR DETAILS. CARE SHALL BE TAKEN WHEN PLACING THE TOPSOIL SO AS NOT TO DAMAGE THE CLAY LINER. A CLAY/SOIL, NO ORGANICS, MIXTURE MAY BE USED IF THE ABOVE SPECIFICATIONS ARE SATISFIED AND WITH WRITTEN APPROVAL BY THE GEOTECHNICAL ENGINEER.

PRECAST CONCRETE MATERIALS NOTES:

1. ALL PRECAST CONCRETE STRUCTURES SHALL CONFORM TO ASTM C913 (RECTANGULAR) OR C478 (ROUND).
2. ALL REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM C76, CLASS III (UNLESS OTHERWISE NOTED).
   2.1. O-RING JOINTS (RGRCP) SHALL CONFORM TO ASTM C443 & ASTM C361.
   2.2. NON O-RING JOINTS (RCP) SHALL CONFORM TO ASTM C990

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
BRANDON J. MILES

0 15 30
SCALE: 1 inch = 30 ft. H
1 inch = 3 ft. V

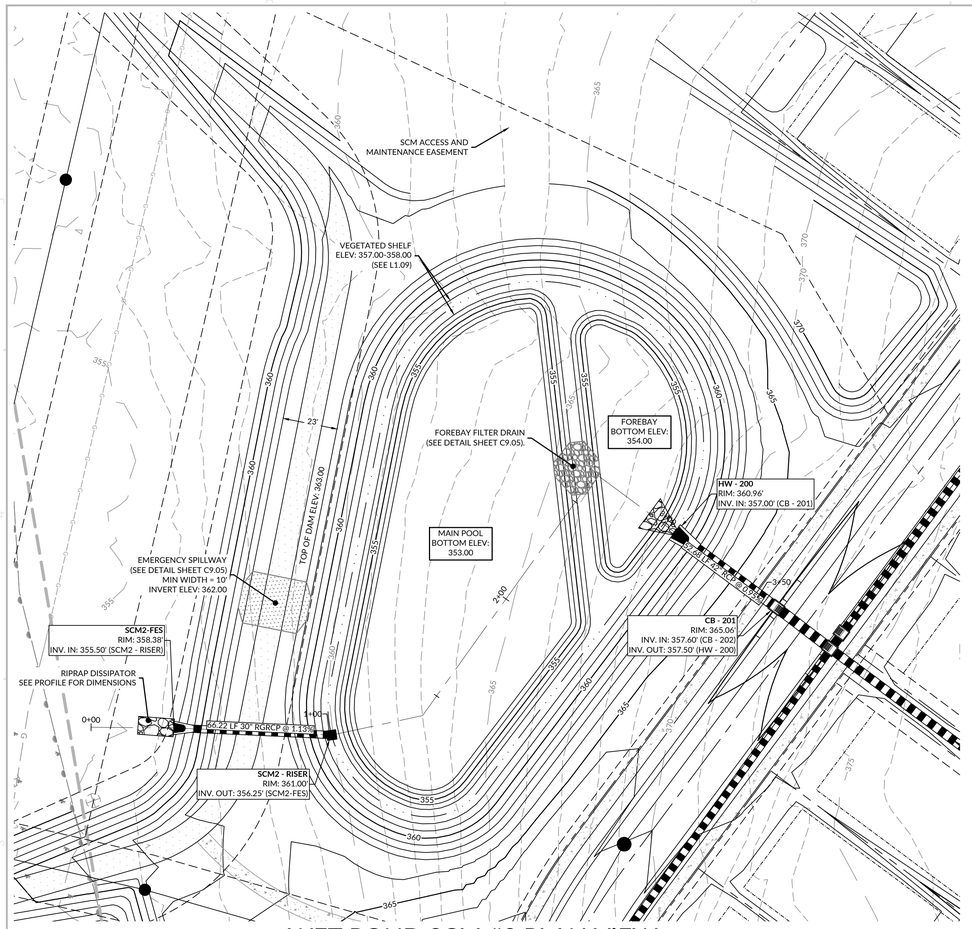
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SCM 1 PLAN & PROFILE

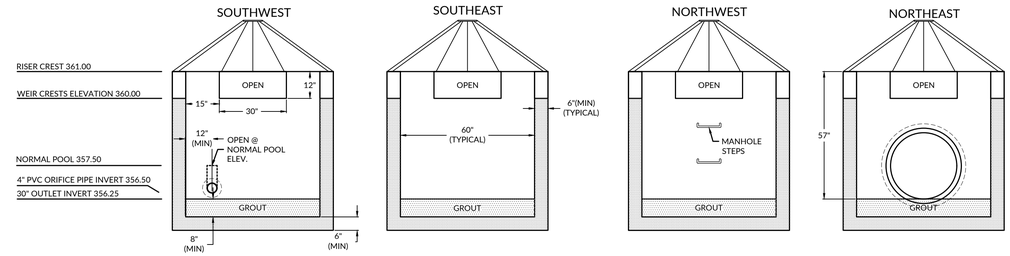
C9.01

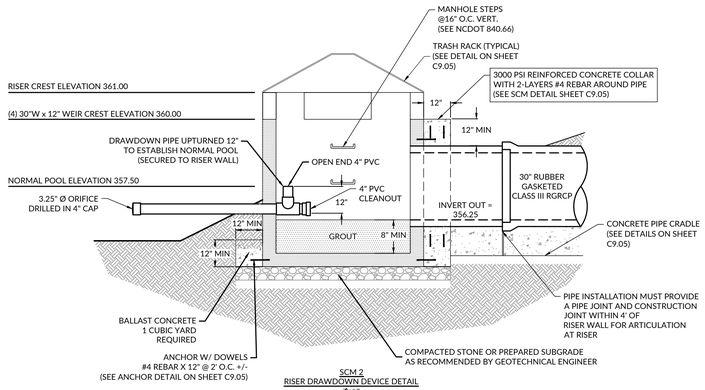
J:\23\0045 public_secondary\ assemblage\ CAD\ drawing sets\ construction\ C9.00-9.05 SCM Plan and Profile and Details.dwg - Thursday, February 27, 2025 5:23:38 PM - JKEITH



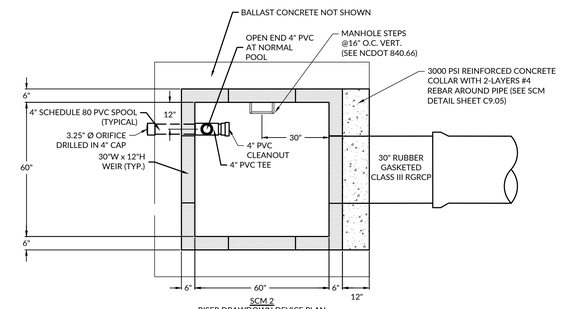
WET POND SCM #2 PLAN VIEW

SCALE: 1" = 30'



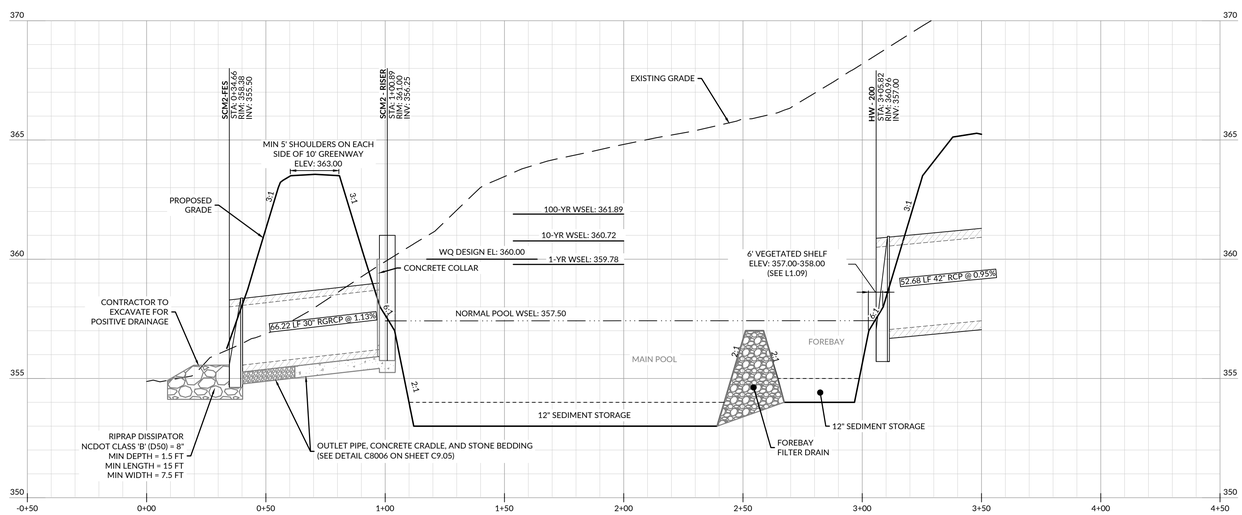


SCM 2
RISER DRAWDOWN DEVICE DETAIL
1" = 1'-0"



SCM 2
RISER DRAWDOWN DEVICE PLAN
1" = 1'-0"

NOTE:
RISER AND BALLAST CONCRETE HAVE BEEN SIZED BASED ON BUOYANCY CALCULATIONS. ADJUSTMENTS TO CONCRETE DIMENSIONS ARE NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL. ANY DIMENSIONAL CHANGES TO BALLAST CONCRETE BASE AND RISER MUST BE REQUESTED IN WRITING AND MUST BE ACCOMPANIED BY BUOYANCY CALCULATIONS SIGNED AND SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.



WET POND SCM #2 PROFILE VIEW

SCALE: 1" = 30' HORIZONTAL, 1" = 3' VERTICAL

WET POND STORMWATER CONTROL MEASURE (SCM) GENERAL NOTES:

1. PRIOR TO OR DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE PLANS OR SPECIFICATIONS.
2. ALL CONSTRUCTION AND MINIMUM DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL STANDARDS AND SPECIFICATIONS, HEREBY INCORPORATED BY REFERENCE.
3. UPON COMPLETION OF CONSTRUCTION, CERTIFICATION OF THE SCM BY THE GEOTECHNICAL ENGINEER WILL BE REQUIRED PRIOR TO FINAL SCM ACCEPTANCE.
4. THE GEOTECHNICAL ENGINEER SHALL EVALUATE SOILS FOR SUITABILITY OF DAM CONSTRUCTION AND SLOPE STABILITY.
5. PRIOR TO PLACEMENT OF EMBANKMENT FILL, THE GEOTECHNICAL ENGINEER SHALL SUPERVISE THE FOUNDATION PREPARATION AND APPROVE THE DEPTH AND EXTENT OF THE CUTOFF TRENCH, A MINIMUM OF 1 FOOT SHALL BE EXCAVATED.
6. THE DAM AND FOREBAY BERMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS UNLESS SUPERCEDED BY THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
   - BORROW MATERIALS FOR USE AS EMBANKMENT FILL SHALL BE FREE OF ORGANICS, ROOTS AND OTHER WOODY VEGETATION OR ORGANIC DEBRIS.
   - FILL MATERIALS SHALL CONSIST OF SOILS WHICH CLASSIFY AS SC, SM, CL, CL-CH AND ML IN ACCORDANCE WITH THE UNIFIED CLASSIFICATION SYSTEM OR AS APPROVED BY THE GEOTECHNICAL ENGINEER.
   - FILL MATERIALS SHALL HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES IN MEAN DIAMETER.
   - FILL SHALL BE PLACED IN 8 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT AND IN 4 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HAND OPERATED TAMPERS UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE. FILL SHALL BE BROUGHT UP BY BENCHING INTO THE EXISTING SLOPE. A MAXIMUM HEIGHT OF 2 FEET SHALL BE USED FOR EACH BENCH LIFT TAKING CARE TO REMOVE ROOT STRUCTURES AS THE FILL PROCEEDS. THE SURFACE OF EACH LIFT SHALL BE SCARIFIED PRIOR TO PLACEMENT OF THE NEXT LIFT IN ORDER TO EFFECTIVELY TIE THE FILL LIFTS TOGETHER.
   - ALL COMPACTION SHALL BE TESTED BY THE NUCLEAR METHOD (ASTM D-6938) OR SAND CONE METHOD (ASTM D-1556) AT A RATE OF AT LEAST ONE TEST PER 5,000 SF PER ONE FOOT OF COMPACTED FILL THICKNESS IN GENERAL AREA FILLS AND ONE TEST PER 50 LINEAL FEET PER LIFT ALONG THE BARREL.
   - THE MINIMUM COMPACTION SHALL BE A MINIMUM OF 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698) AT MOISTURE CONTENTS VARYING FROM 2 PERCENT BELOW TO 3 PERCENT ABOVE OPTIMUM MOISTURE CONTENT DETERMINED BY STANDARD PROCTOR TEST.
7. SUBGRADE FOR THE RISER STRUCTURE AND OUTLET PIPE SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.IF THE GEOTECHNICAL ENGINEER REQUIRES ADDITIONAL SUBGRADE PREPARATION, THE ADDITIONAL COST SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.
8. THE OUTLET PIPE SHALL BE BEDDED IN CONCRETE FOR 2/3 OF THE PIPE LENGTH, BEGINNING AT THE RISER, AND IN #78 STONE FOR 1/3 OF PIPE LENGTH TO THE OUTLET. SEE DETAILS ON SHEET C9.05.
9. EMBANKMENT AND SIDE SLOPES OF THE BASIN SHALL BE STABILIZED PER SEEDING SCHEDULE ON EROSION CONTROL DETAILS SHEET OR SODDED. SEE LANDSCAPE PLAN (L1.09) FOR FURTHER PLANTING DETAILS.
10. IF, DURING CONSTRUCTION, THE SCM IS TO BE USED AS AN EROSION CONTROL MEASURE, THE FOREBAY BERM(S) SHALL NOT BE INSTALLED DURING THE INITIAL CONSTRUCTION OR WHILE THE SCM IS USED AS AN EROSION CONTROL MEASURE.
11. UNLESS OTHERWISE NOTED, ALL PERMANENT STRUCTURES (e.g. RISER/BARREL, WEIR WALLS, ETC.) ARE TO BE INSTALLED WITH THE INITIAL DAM CONSTRUCTION.
12. FOR SITE BUILT FEATURES (e.g. WEIR WALLS, DROP STRUCTURES, BRIDGES, ETC.), THE CONTRACTOR SHALL PROVIDE STRUCTURAL DRAWINGS TO BE SIGNED AND SEALED BY A NC PROFESSIONAL ENGINEER AND TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
13. PRIOR TO FINAL GRADING OF THE SCM, THE CONTRACTOR SHALL PROVIDE SUFFICIENT AS-BUILT SURVEY INFORMATION TO CONFIRM THAT THE FINISHED SCM WILL MEET THE SPECIFIC DIMENSIONAL REQUIREMENTS APPLICABLE TO THE SCM. THOSE REQUIREMENTS INCLUDE:
   - POND BOTTOM ELEVATION = 353.00 FT
   - DRAWDOWN OVERFLOW ELEVATION (NORMAL POOL) = 357.50 FT
   - MINIMUM SURFACE AREA AT NORMAL POOL ELEVATION = 23,322 SF
   - MINIMUM VOLUME REQUIRED FOR WATER QUALITY = 29,797 CF
   - PROVIDED VOLUME FOR WATER QUALITY = 66,090 CF
   - WEIR CREST ELEVATION= 360.00 FT
   - RISER CREST ELEVATION= 361.00 FT
   - LOW POINT TOP OF EMBANKMENT (AUXILIARY SPILLWAY) = 362.00 FT
   - AVERAGE TOP OF EMBANKMENT = 363.00 FT
15. ELEVATIONS SHALL BE WITHIN 0.1 FEET OF THE ABOVE ELEVATIONS FOR EARTHWORK, AND 0.05 FEET FOR OUTLET STRUCTURE. ALL SURFACE AREAS ARE THE MINIMUM AREAS. REQUEST FOR A REDUCTIONS IN THE MINIMUM VALUES WILL BE CONSIDERED ON A CASE BY CASE BASIS.
16. ONCE THE PROJECT SITE HAS BEEN STABILIZED, CONTRACTOR SHALL OBTAIN APPROVAL BY EROSION CONTROL INSPECTOR IN ORDER TO REMOVE TEMPORARY EROSION CONTROL DEVICES.
   - ONCE ALL SEDIMENT AND EROSION CONTROL DEVICES HAVE BEEN REMOVED, THE SCM SHALL BE CONVERTED TO A PERMANENT SCM.
   - ALL SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
   - FOREBAY AND VEGETATED SHELF SHALL BE CONSTRUCTED AS SHOWN ON THE PLAN.
   - VEGETATED SHELF SHALL BE PLANTED PER PLANT SCHEDULE ON LANDSCAPE PLAN (SEE L1.09).
17. FINAL CERTIFICATION OF THE SCM BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED IS REQUIRED.

CLAY LINER SPECIFICATIONS:

THE CONTRACTOR SHALL INSTALL A CLAY LINER TO MAINTAIN A PERMANENT POOL AT THE DESIGN ELEVATION. IF THE SITE GEOTECHNICAL ENGINEER DETERMINES THAT THE EXISTING SITE CONDITIONS (SOIL PROPERTIES, EXISTING WATER TABLE, ETC.) INDICATE THAT NORMAL POOL CAN BE MAINTAINED WITHOUT A CLAY LINER, THE GEOTECHNICAL ENGINEER WILL PROVIDE NOTICE IN WRITING TO THE PROJECT ENGINEER THAT THE CLAY LINER IS NOT REQUIRED. IF THE CLAY LINER IS NOT INSTALLED, THE OWNER SHALL RECEIVE A CREDIT FOR THE DELETION OF THE LINER.

AT A MINIMUM, THE CLAY LINER MATERIAL FOR THE WET POND SHALL MEET THE FOLLOWING SPECIFICATIONS:

- UNIFIED SOIL CLASSIFICATION SYSTEM DESIGNATION OF CL, CH, ML, OR SC
- MINIMUM OF 40% PASSING #200 SIEVE
- MINIMUM PLASTICITY INDEX OF 12
- MAXIMUM PERMEABILITY OF 1 X 10^{-5} cm/sec
- A MINIMUM OF 2 TESTS OF EACH ABOVE PARAMETER SHALL BE PROVIDED FROM AN APPROVED LABORATORY ON THE LINER MATERIAL AND PRESENTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.
- COMPACTION TO A MINIMUM OF 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698), AND WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT (MINIMUM OF 1 COMPACTION DENSITY TEST PER 2500 SQUARE FEET).
- AN IN-PLACE MAXIMUM INFILTRATION RATE OF 0.01 INCHES PER HOUR.
- RECOMMENDATIONS OF THE SITE GEOTECHNICAL ENGINEER MAY SUPERCEDE THE ABOVE SPECIFICATIONS.

THE CLAY LINER SHALL BE PLACED UNDER THE BOTTOM OF THE SCM PERMANENT POOL TO A MINIMUM THICKNESS OF 8 INCHES. A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE PLACED ABOVE THE CLAY LINER TO THE FINISHED GRADE AS SHOWN ON THE DRAWINGS AND/OR DETAILS. CARE SHALL BE TAKEN WHEN PLACING THE TOPSOIL SO AS NOT TO DAMAGE THE CLAY LINER. A CLAY/SOIL, NO ORGANICS, MIXTURE MAY BE USED IF THE ABOVE SPECIFICATIONS ARE SATISFIED AND WITH WRITTEN APPROVAL BY THE GEOTECHNICAL ENGINEER.

PRECAST CONCRETE MATERIALS NOTES:

1. ALL PRECAST CONCRETE STRUCTURES SHALL CONFORM TO ASTM C913 (RECTANGULAR) OR C478 (ROUND).
2. ALL REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM C76, CLASS III (UNLESS OTHERWISE NOTED),
   - 2.1. O-RING JOINTS (RGRCP) SHALL CONFORM TO ASTM C443 & ASTM C361.
   - 2.2. NON O-RING JOINTS (RCP) SHALL CONFORM TO ASTM C990

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049001 WILLIAM NIXON J. MILLER
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 15 30
SCALE: 1 inch = 30 ft. H
1 inch = 3 ft. V

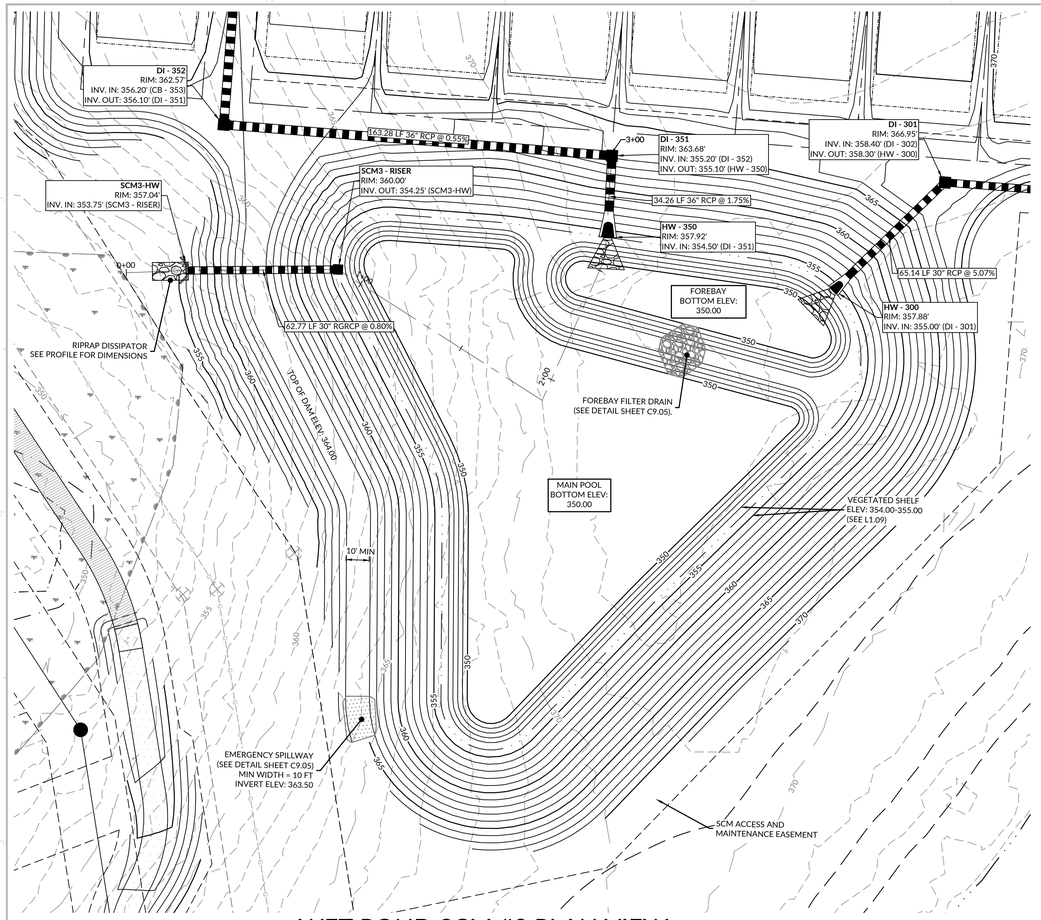
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR	DGN: WR CKD: WR

SCM 2 PLAN & PROFILE

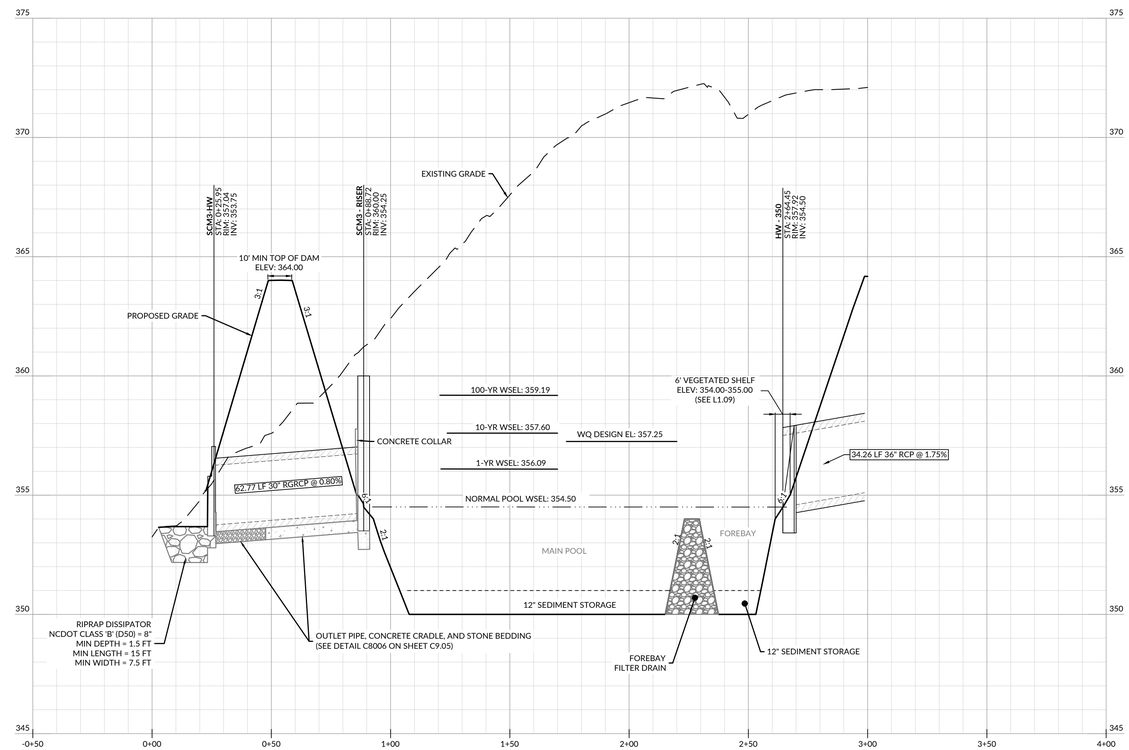
C9.02

J:\2310045-pulte_woodlief assemblage\CAD\drawing sets\construction\C9.00-10.5 SCM Plan and Profile and Detailing, Thursday, February 27, 2025 5:23:55 PM - JKEITH



WET POND SCM #3 PLAN VIEW

SCALE: 1" = 30'



WET POND SCM #3 PROFILE VIEW

SCALE: 1" = 30' HORIZONTAL, 1" = 3' VERTICAL

WET POND STORMWATER CONTROL MEASURE (SCM) GENERAL NOTES:

1. PRIOR TO OR DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE PLANS OR SPECIFICATIONS.
2. ALL CONSTRUCTION AND MINIMUM DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL STANDARDS AND SPECIFICATIONS, HEREBY INCORPORATED BY REFERENCE.
3. UPON COMPLETION OF CONSTRUCTION, CERTIFICATION OF THE SCM BY THE GEOTECHNICAL ENGINEER WILL BE REQUIRED PRIOR TO FINAL SCM ACCEPTANCE.
4. THE GEOTECHNICAL ENGINEER SHALL EVALUATE SOILS FOR SUITABILITY OF DAM CONSTRUCTION AND SLOPE STABILITY.
5. PRIOR TO PLACEMENT OF EMBANKMENT FILL, THE GEOTECHNICAL ENGINEER SHALL SUPERVISE THE FOUNDATION PREPARATION AND APPROVE THE DEPTH AND EXTENT OF THE CUTOFF TRENCH, A MINIMUM OF 1 FOOT SHALL BE EXCAVATED.
6. THE DAM AND FOREBAY BERMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS UNLESS SUPERCEDED BY THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
   - BORROW MATERIALS FOR USE AS EMBANKMENT FILL SHALL BE FREE OF ORGANICS, ROOTS AND OTHER WOODY VEGETATION OR ORGANIC DEBRIS.
   - FILL MATERIALS SHALL CONSIST OF SOILS WHICH CLASSIFY AS SC, SM, CL, CL-CH AND ML IN ACCORDANCE WITH THE UNIFIED CLASSIFICATION SYSTEM OR AS APPROVED BY THE GEOTECHNICAL ENGINEER.
   - FILL MATERIALS SHALL HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES IN MEAN DIAMETER.
   - FILL SHALL BE PLACED IN 8 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT AND IN 4 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HAND OPERATED TAMPERS UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE. FILL SHALL BE BROUGHT UP BY BENCHING INTO THE EXISTING SLOPE. A MAXIMUM HEIGHT OF 2 FEET SHALL BE USED FOR EACH BENCH LIFT TAKING CARE TO REMOVE ROOT STRUCTURES AS THE FILL PROCEEDS. THE SURFACE OF EACH LIFT SHALL BE SCARIFIED PRIOR TO PLACEMENT OF THE NEXT LIFT IN ORDER TO EFFECTIVELY TIE THE FILL LIFTS TOGETHER.
   - ALL COMPACTION SHALL BE TESTED BY THE NUCLEAR METHOD (ASTM D-6938) OR SAND CONE METHOD (ASTM D-1556) AT A RATE OF AT LEAST ONE TEST PER 5,000 SF PER ONE FOOT OF COMPACTED FILL THICKNESS IN GENERAL AREA FILLS AND ONE TEST PER 50 LINEAL FEET PER LIFT ALONG THE BARREL.
   - THE MINIMUM COMPACTION SHALL BE A MINIMUM OF 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698) AT MOISTURE CONTENTS VARYING FROM 2 PERCENT BELOW TO 3 PERCENT ABOVE OPTIMUM MOISTURE CONTENT DETERMINED BY STANDARD PROCTOR TEST.
7. SUBGRADE FOR THE RISER STRUCTURE AND OUTLET PIPE SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.IF THE GEOTECHNICAL ENGINEER REQUIRES ADDITIONAL SUBGRADE PREPARATION, THE ADDITIONAL COST SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.
8. THE OUTLET PIPE SHALL BE BEDDED IN CONCRETE FOR 2/3 OF THE PIPE LENGTH, BEGINNING AT THE RISER, AND IN #78 STONE FOR 1/3 OF PIPE LENGTH TO THE OUTLET. SEE DETAILS ON SHEET C9.05.
9. EMBANKMENT AND SIDE SLOPES OF THE BASIN SHALL BE STABILIZED PER SEEDING SCHEDULE ON EROSION CONTROL DETAILS SHEET OR SODDED. SEE LANDSCAPE PLAN (L1.09) FOR FURTHER PLANTING DETAILS.
10. IF, DURING CONSTRUCTION, THE SCM IS TO BE USED AS AN EROSION CONTROL MEASURE, THE FOREBAY BERM(S) SHALL NOT BE INSTALLED DURING THE INITIAL CONSTRUCTION OR WHILE THE SCM IS USED AS AN EROSION CONTROL MEASURE.
11. UNLESS OTHERWISE NOTED, ALL PERMANENT STRUCTURES (e.g. RISER/BARREL, WEIR WALLS, ETC.) ARE TO BE INSTALLED WITH THE INITIAL DAM CONSTRUCTION.
12. FOR SITE BUILT FEATURES (e.g. WEIR WALLS, DROP STRUCTURES, BRIDGES, ETC.), THE CONTRACTOR SHALL PROVIDE STRUCTURAL DRAWINGS TO BE SIGNED AND SEALED BY A NC PROFESSIONAL ENGINEER AND TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
13. PRIOR TO FINAL GRADING OF THE SCM, THE CONTRACTOR SHALL PROVIDE SUFFICIENT AS-BUILT SURVEY INFORMATION TO CONFIRM THAT THE FINISHED SCM WILL MEET THE SPECIFIC DIMENSIONAL REQUIREMENTS APPLICABLE TO THE SCM. THOSE REQUIREMENTS INCLUDE:
   - POND BOTTOM ELEVATION = 350.00 FT
   - DRAWDOWN OVERFLOW ELEVATION (NORMAL POOL) = 354.50 FT
   - MINIMUM SURFACE AREA AT NORMAL POOL ELEVATION = 28,902 SF
   - MINIMUM VOLUME REQUIRED FOR WATER QUALITY = 23,403 CF
   - PROVIDED VOLUME FOR WATER QUALITY = 91,063 CF
   - RECTANGULAR ORIFICE ELEVATION= 357.25 FT
   - RISER CREST ELEVATION= 360.00 FT
   - LOW POINT TOP OF EMBANKMENT (AUXILIARY SPILLWAY) = 363.50 FT
   - AVERAGE TOP OF EMBANKMENT = 364.00 FT
15. ELEVATIONS SHALL BE WITHIN 0.1 FEET OF THE ABOVE ELEVATIONS FOR EARTHWORK, AND 0.05 FEET FOR OUTLET STRUCTURE. ALL SURFACE AREAS ARE THE MINIMUM AREAS. REQUEST FOR A REDUCTIONS IN THE MINIMUM VALUES WILL BE CONSIDERED ON A CASE BY CASE BASIS.
16. ONCE THE PROJECT SITE HAS BEEN STABILIZED, CONTRACTOR SHALL OBTAIN APPROVAL BY EROSION CONTROL INSPECTOR IN ORDER TO REMOVE TEMPORARY EROSION CONTROL DEVICES.
   - ONCE ALL SEDIMENT AND EROSION CONTROL DEVICES HAVE BEEN REMOVED, THE SCM SHALL BE CONVERTED TO A PERMANENT SCM.
   - ALL SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
   - FOREBAY AND VEGETATED SHELF SHALL BE CONSTRUCTED AS SHOWN ON THE PLAN.
   - VEGETATED SHELF SHALL BE PLANTED PER PLANT SCHEDULE ON LANDSCAPE PLAN (SEE L1.09).
17. FINAL CERTIFICATION OF THE SCM BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED IS REQUIRED.

CLAY LINER SPECIFICATIONS:

THE CONTRACTOR SHALL INSTALL A CLAY LINER TO MAINTAIN A PERMANENT POOL AT THE DESIGN ELEVATION. IF THE SITE GEOTECHNICAL ENGINEER DETERMINES THAT THE EXISTING SITE CONDITIONS (SOIL PROPERTIES, EXISTING WATER TABLE, ETC.) INDICATE THAT NORMAL POOL CAN BE MAINTAINED WITHOUT A CLAY LINER, THE GEOTECHNICAL ENGINEER WILL PROVIDE NOTICE IN WRITING TO THE PROJECT ENGINEER THAT THE CLAY LINER IS NOT REQUIRED. IF THE CLAY LINER IS NOT INSTALLED, THE OWNER SHALL RECEIVE A CREDIT FOR THE DELETION OF THE LINER.

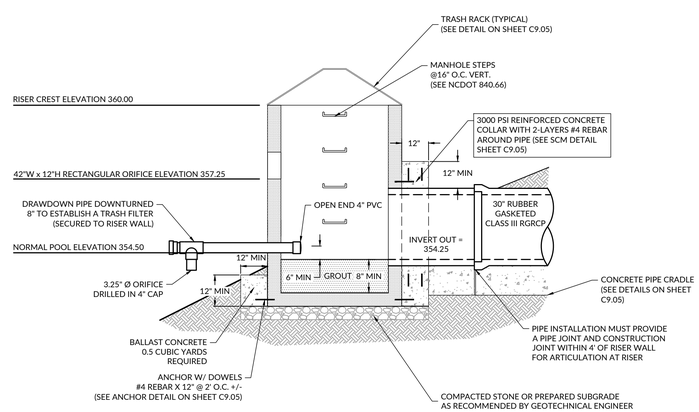
AT A MINIMUM, THE CLAY LINER MATERIAL FOR THE WET POND SHALL MEET THE FOLLOWING SPECIFICATIONS:

- UNIFIED SOIL CLASSIFICATION SYSTEM DESIGNATION OF CL, CH, ML, OR SC
- MINIMUM OF 40% PASSING #200 SIEVE
- MINIMUM PLASTICITY INDEX OF 12
- MAXIMUM PERMEABILITY OF 1×10^{-5} cm/sec
- A MINIMUM OF 2 TESTS OF EACH ABOVE PARAMETER SHALL BE PROVIDED FROM AN APPROVED LABORATORY ON THE LINER MATERIAL AND PRESENTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.
- COMPACTION TO A MINIMUM OF 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698), AND WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT (MINIMUM OF 1 COMPACTION DENSITY TEST PER 2500 SQUARE FEET).
- AN IN-PLACE MAXIMUM INFILTRATION RATE OF 0.01 INCHES PER HOUR.
- RECOMMENDATIONS OF THE SITE GEOTECHNICAL ENGINEER MAY SUPERCEDE THE ABOVE SPECIFICATIONS.

THE CLAY LINER SHALL BE PLACED UNDER THE BOTTOM OF THE SCM PERMANENT POOL TO A MINIMUM THICKNESS OF 8 INCHES. A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE PLACED ABOVE THE CLAY LINER TO THE FINISHED GRADE AS SHOWN ON THE DRAWINGS AND/OR DETAILS. CARE SHALL BE TAKEN WHEN PLACING THE TOPSOIL SO AS NOT TO DAMAGE THE CLAY LINER. A CLAY/SOIL NO ORGANICS, MIXTURE MAY BE USED IF THE ABOVE SPECIFICATIONS ARE SATISFIED AND WITH WRITTEN APPROVAL BY THE GEOTECHNICAL ENGINEER.

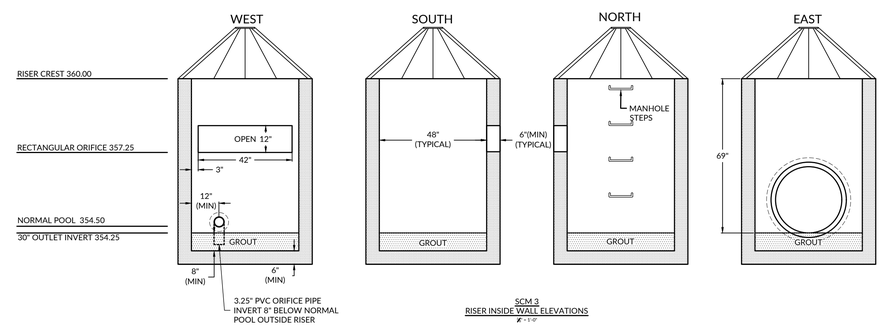
PRECAST CONCRETE MATERIALS NOTES:

1. ALL PRECAST CONCRETE STRUCTURES SHALL CONFORM TO ASTM C913 (RECTANGULAR) OR C478 (ROUND).
2. ALL REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM C76, CLASS III (UNLESS OTHERWISE NOTED).
   - 2.1. O-RING JOINTS (RGRCP) SHALL CONFORM TO ASTM C443 & ASTM C361.
   - 2.2. NON O-RING JOINTS (RCP) SHALL CONFORM TO ASTM C990

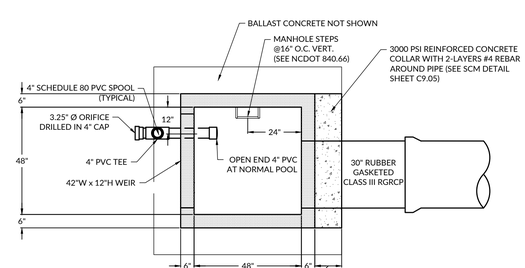


SCM 3
RISER DRAWDOWN DEVICE DETAIL
$\not{E}$ - 1'-0"

NOTE:
RISER AND BALLAST CONCRETE HAVE BEEN SIZED BASED ON BUOYANCY CALCULATIONS. ADJUSTMENTS TO CONCRETE DIMENSIONS ARE NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL. ANY DIMENSIONAL CHANGES TO BALLAST CONCRETE BASE AND RISER MUST BE REQUESTED IN WRITING AND MUST BE ACCOMPANIED BY BUOYANCY CALCULATIONS SIGNED AND SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.



SCM 3
RISER INSIDE WALL ELEVATIONS
$\not{E}$ - 1'-0"



SCM 3
RISER DRAWDOWN DEVICE PLAN
$\not{E}$ - 1'-0"

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
BRANDON J. MILLER

SCALE: 1 inch = 30 ft. H
1 inch = 3 ft. V

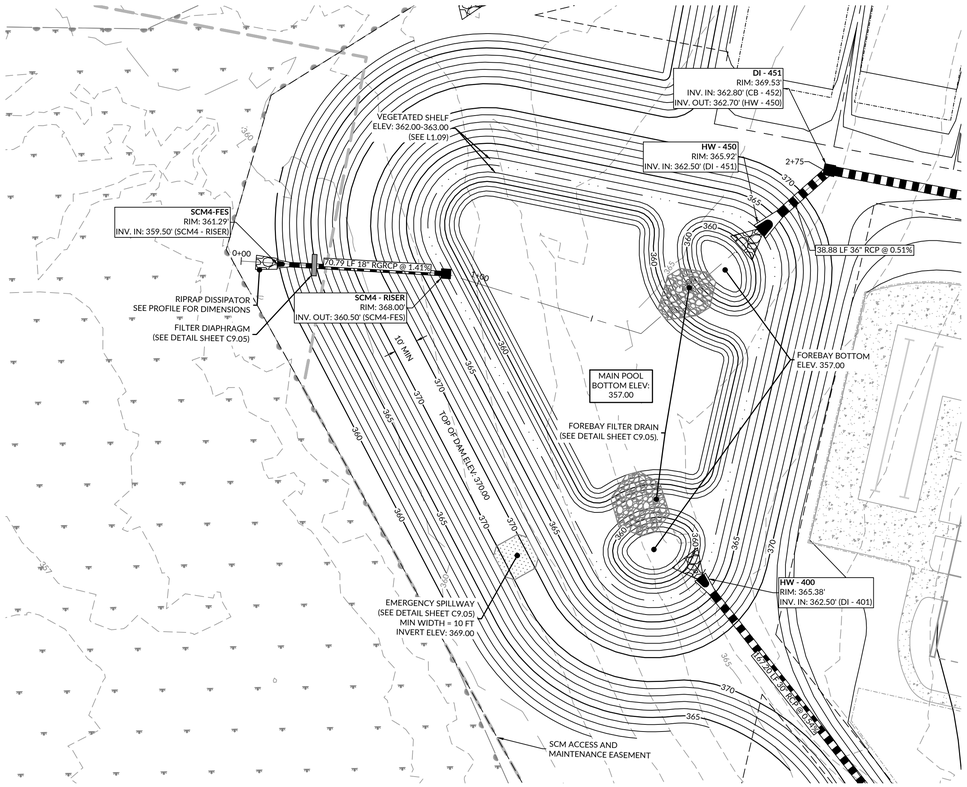
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR	DGN: WR CKD: WR

SCM 3 PLAN & PROFILE

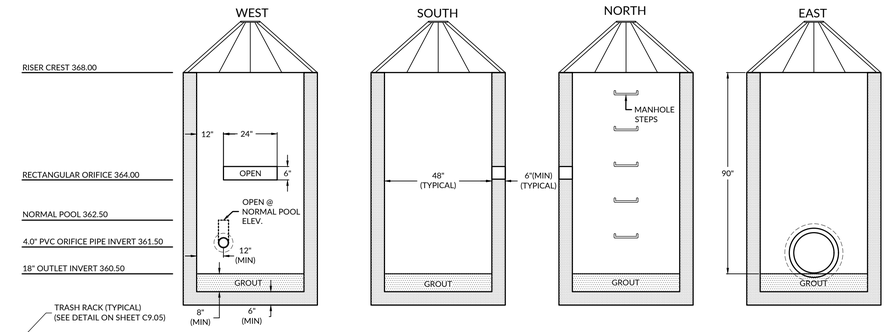
C9.03

J:\23\0045-public_secondlief_assemblage\CADD\drawing sets\construction\C9.00-V.05 SCM Plan and Profile and Details.dwg - Thursday, February 27, 2025 5:24:13 PM - JKOTH

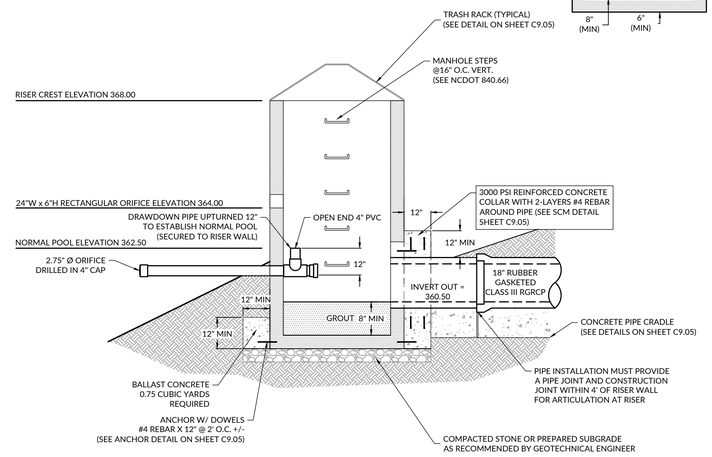


WET POND SCM #4 PLAN VIEW

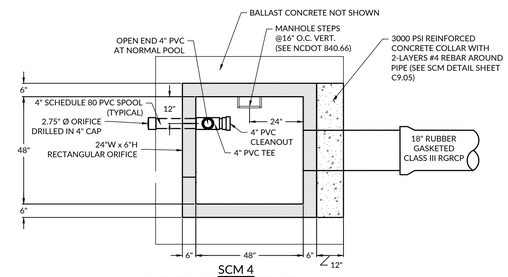
SCALE: 1" = 30'



SCM 4
RISER INSIDE WALL ELEVATIONS
1" = 1'-0"

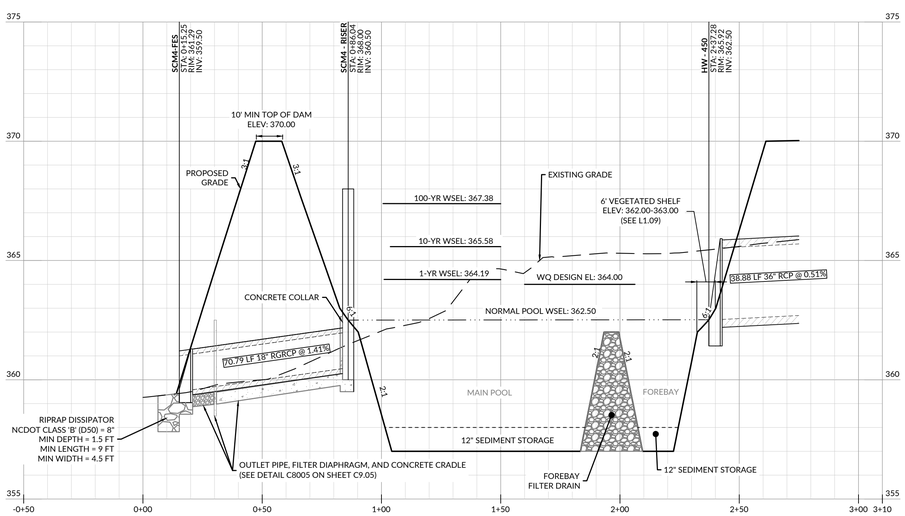


SCM 4
RISER DRAWDOWN DEVICE DETAIL
1" = 1'-0"



SCM 4
RISER DRAWDOWN DEVICE PLAN
1" = 1'-0"

NOTE:
RISER AND BALLAST CONCRETE HAVE BEEN SIZED BASED ON BUOYANCY CALCULATIONS. ADJUSTMENTS TO CONCRETE DIMENSIONS ARE NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL. ANY DIMENSIONAL CHANGES TO BALLAST CONCRETE BASE AND RISER MUST BE REQUESTED IN WRITING AND MUST BE ACCOMPANIED BY BUOYANCY CALCULATIONS SIGNED AND SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.



WET POND SCM #4 PROFILE VIEW

SCALE: 1" = 30' HORIZONTAL, 1" = 3' VERTICAL

WET POND STORMWATER CONTROL MEASURE (SCM) GENERAL NOTES:

1. PRIOR TO OR DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE PLANS OR SPECIFICATIONS.
2. ALL CONSTRUCTION AND MINIMUM DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL STANDARDS AND SPECIFICATIONS, HEREBY INCORPORATED BY REFERENCE.
3. UPON COMPLETION OF CONSTRUCTION, CERTIFICATION OF THE SCM BY THE GEOTECHNICAL ENGINEER WILL BE REQUIRED PRIOR TO FINAL SCM ACCEPTANCE.
4. THE GEOTECHNICAL ENGINEER SHALL EVALUATE SOILS FOR SUITABILITY OF DAM CONSTRUCTION AND SLOPE STABILITY.
5. PRIOR TO PLACEMENT OF EMBANKMENT FILL, THE GEOTECHNICAL ENGINEER SHALL SUPERVISE THE FOUNDATION PREPARATION AND APPROVE THE DEPTH AND EXTENT OF THE CUTOFF TRENCH, A MINIMUM OF 1 FOOT SHALL BE EXCAVATED.
6. THE DAM AND FOREBAY BERMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS UNLESS SUPERCEDED BY THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
   - BORROW MATERIALS FOR USE AS EMBANKMENT FILL SHALL BE FREE OF ORGANICS, ROOTS AND OTHER WOODY VEGETATION OR ORGANIC DEBRIS.
   - FILL MATERIALS SHALL CONSIST OF SOILS WHICH CLASSIFY AS SC, SM, CL, CL-CH AND ML IN ACCORDANCE WITH THE UNIFIED CLASSIFICATION SYSTEM OR AS APPROVED BY THE GEOTECHNICAL ENGINEER.
   - FILL MATERIALS SHALL HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES IN MEAN DIAMETER.
   - FILL SHALL BE PLACED IN 8 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT AND IN 4 INCH (MAXIMUM) LOOSE LIFTS FOR MATERIAL COMPACTED BY HAND OPERATED TAMPERS UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE. FILL SHALL BE BROUGHT UP BY BENCHING INTO THE EXISTING SLOPE. A MAXIMUM HEIGHT OF 2 FEET SHALL BE USED FOR EACH BENCH LIFT TAKING CARE TO REMOVE ROOT STRUCTURES AS THE FILL PROCEEDS. THE SURFACE OF EACH LIFT SHALL BE SCARIFIED PRIOR TO PLACEMENT OF THE NEXT LIFT IN ORDER TO EFFECTIVELY TIE THE FILL LIFTS TOGETHER.
   - ALL COMPACTION SHALL BE TESTED BY THE NUCLEAR METHOD (ASTM D-6938) OR SAND CONE METHOD (ASTM D-1556) AT A RATE OF AT LEAST ONE TEST PER 5,000 SF PER ONE FOOT OF COMPACTED FILL THICKNESS IN GENERAL AREA FILLS AND ONE TEST PER 50 LINEAL FEET PER LIFT ALONG THE BARREL.
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7. SUBGRADE FOR THE RISER STRUCTURE AND OUTLET PIPE SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.IF THE GEOTECHNICAL ENGINEER REQUIRES ADDITIONAL SUBGRADE PREPARATION, THE ADDITIONAL COST SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.
8. THE OUTLET PIPE SHALL BE BEDDED IN CONCRETE FOR 2/3 OF THE PIPE LENGTH, BEGINNING AT THE RISER, AND IN #78 STONE FOR 1/3 OF PIPE LENGTH TO THE OUTLET. SEE DETAILS ON SHEET C9.05.
9. EMBANKMENT AND SIDE SLOPES OF THE BASIN SHALL BE STABILIZED PER SEEDING SCHEDULE ON EROSION CONTROL DETAILS SHEET OR SODDED. SEE LANDSCAPE PLAN (L1.09) FOR FURTHER PLANTING DETAILS.
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11. UNLESS OTHERWISE NOTED, ALL PERMANENT STRUCTURES (e.g. RISER/BARREL, WEIR WALLS, ETC.) ARE TO BE INSTALLED WITH THE INITIAL DAM CONSTRUCTION.
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   - MINIMUM SURFACE AREA AT NORMAL POOL ELEVATION = 16,709 SF
   - MINIMUM VOLUME REQUIRED FOR WATER QUALITY = 18,763 CF
   - PROVIDED VOLUME FOR WATER QUALITY = 27,851 CF
   - RECTANGULAR ORIFICE ELEVATION= 364.00 FT
   - RISER CREST ELEVATION= 368.00 FT
   - LOW POINT TOP OF EMBANKMENT (AUXILIARY SPILLWAY) = 369.00 FT
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   - ALL SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
   - FOREBAY AND VEGETATED SHELF SHALL BE CONSTRUCTED AS SHOWN ON THE PLAN.
   - VEGETATED SHELF SHALL BE PLANTED PER PLANT SCHEDULE ON LANDSCAPE PLAN (SEE L1.09).
17. FINAL CERTIFICATION OF THE SCM BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED IS REQUIRED.

CLAY LINER SPECIFICATIONS:

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AT A MINIMUM, THE CLAY LINER MATERIAL FOR THE WET POND SHALL MEET THE FOLLOWING SPECIFICATIONS:

- UNIFIED SOIL CLASSIFICATION SYSTEM DESIGNATION OF CL, CH, ML, OR SC
- MINIMUM OF 40% PASSING #200 SIEVE
- MINIMUM PLASTICITY INDEX OF 12
- MAXIMUM PERMEABILITY OF 1 X 10^{-5} cm/sec
- A MINIMUM OF 2 TESTS OF EACH ABOVE PARAMETER SHALL BE PROVIDED FROM AN APPROVED LABORATORY ON THE LINER MATERIAL AND PRESENTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF THE MATERIAL.
- COMPACTION TO A MINIMUM OF 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698), AND WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT (MINIMUM OF 1 COMPACTION DENSITY TEST PER 2500 SQUARE FEET).
- AN IN-PLACE MAXIMUM INFILTRATION RATE OF 0.01 INCHES PER HOUR.
- RECOMMENDATIONS OF THE SITE GEOTECHNICAL ENGINEER MAY SUPERCEDE THE ABOVE SPECIFICATIONS.

THE CLAY LINER SHALL BE PLACED UNDER THE BOTTOM OF THE SCM PERMANENT POOL TO A MINIMUM THICKNESS OF 8 INCHES. A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE PLACED ABOVE THE CLAY LINER TO THE FINISHED GRADE AS SHOWN ON THE DRAWINGS AND/OR DETAILS. CARE SHALL BE TAKEN WHEN PLACING THE TOPSOIL SO AS NOT TO DAMAGE THE CLAY LINER. A CLAY/SOIL, NO ORGANICS, MIXTURE MAY BE USED IF THE ABOVE SPECIFICATIONS ARE SATISFIED AND WITH WRITTEN APPROVAL BY THE GEOTECHNICAL ENGINEER.

PRECAST CONCRETE MATERIALS NOTES:

1. ALL PRECAST CONCRETE STRUCTURES SHALL CONFORM TO ASTM C913 (RECTANGULAR) OR C478 (ROUND).
2. ALL REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM C76, CLASS III (UNLESS OTHERWISE NOTED),
   - 2.1. O-RING JOINTS (RGRCP) SHALL CONFORM TO ASTM C443 & ASTM C361.
   - 2.2. NON O-RING JOINTS (RCP) SHALL CONFORM TO ASTM C990

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CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06
ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036161 RAYMOND J. MILLER
PRELIMINARY
NOT APPROVED FOR
CONSTRUCTION

0 15 30
SCALE: 1 inch = 30 ft. H
1 inch = 3 ft. V

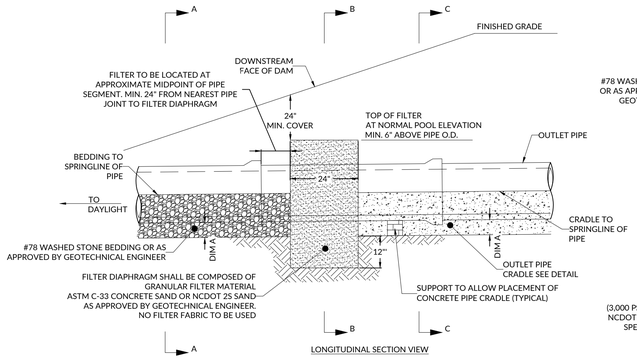
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR DGN: WR	CKD: WR

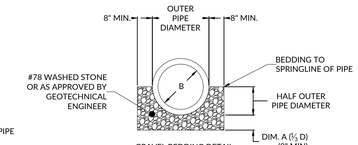
SCM 4 PLAN & PROFILE

C9.04

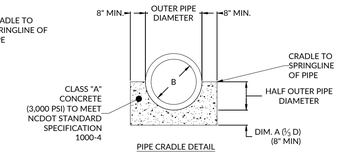
J:\23\0045-pulte_windfall assemblage\CADd\drawing sets\construction\C9\04-fd\ SCM Plan and Profile.dwg - Thursday, February 27, 2025 5:24:26 PM - JKEITH



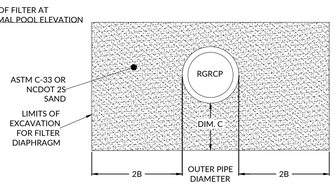
LONGITUDINAL SECTION VIEW



GRAVEL BEDDING DETAIL
SECTION "A-A"



PIPE CRADLE DETAIL
SECTION VIEW "C-C"



FILTER DIAPHRAGM DETAIL
SECTION VIEW "B-B"

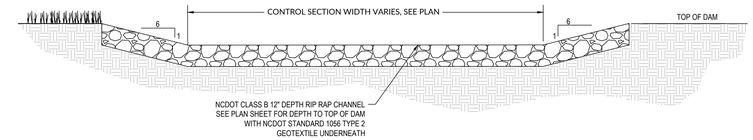
NOTE:
IF PIPE IS INSTALLED IN EXCAVATED TRENCH, THEN SIDE WALLS MAY CONFORM TO TRENCH (TRENCH MAY BE USED AS CRADLE FORM)

NOMINAL PIPE SIZE (D)	DIM A" (½ D)	DIM B (PIPE ID)	DIM C (DIM A + 12")	SCM #
18	8	18	20	4
24	8	24	20	
30	10	30	22	
36	12	36	24	
42	14	42	26	
48	16	48	28	

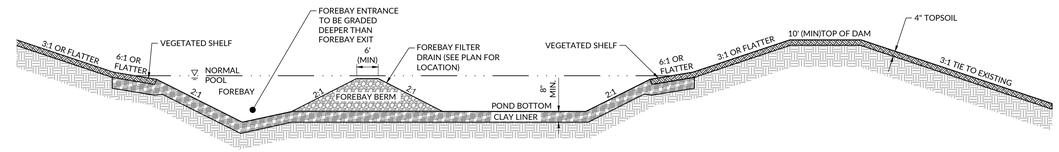
ALL DIMENSIONS IN INCHES
DIM A = 8" MINIMUM
18" MINIMUM PIPE DIAMETER

OUTLET PIPE, FILTER DIAPHRAGM, AND CONCRETE CRADLE — DRAINAGE MISC

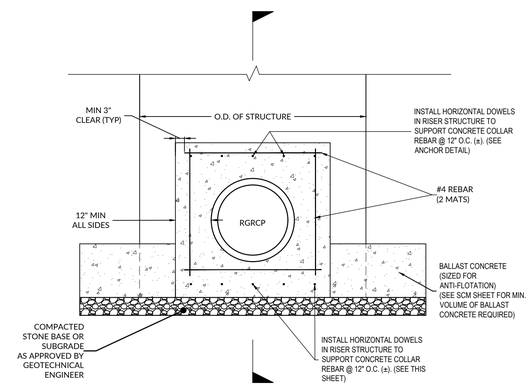
Scale:NTS — C8005



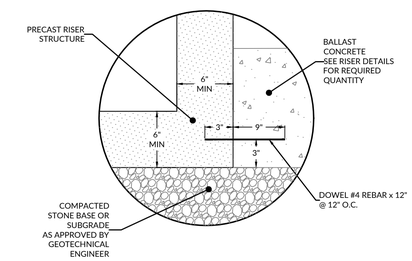
EMERGENCY SPILLWAY DETAIL



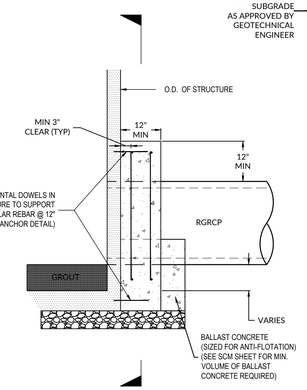
WET POND GRADING DETAIL
NOT TO SCALE



CROSS-SECTION VIEW

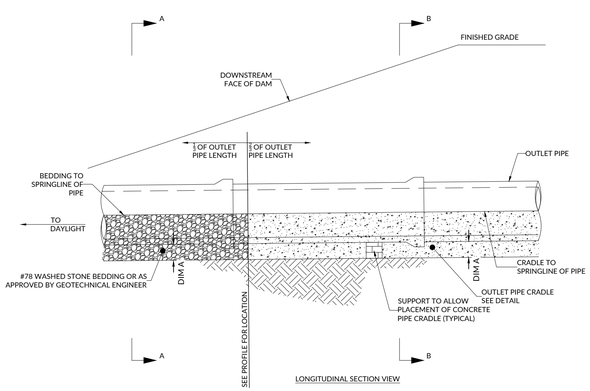


ANCHOR DETAIL (TYPICAL)
NOT TO SCALE

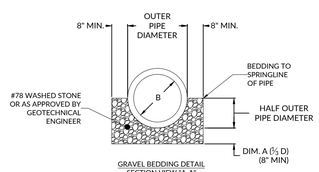


LONGITUDINAL SECTION VIEW

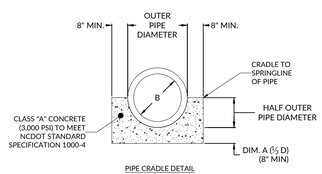
CONCRETE PIPE COLLAR AT STRUCTURE DETAIL
NOT TO SCALE



LONGITUDINAL SECTION VIEW



GRAVEL BEDDING DETAIL
SECTION VIEW "A-A"



PIPE CRADLE DETAIL
SECTION VIEW "B-B"

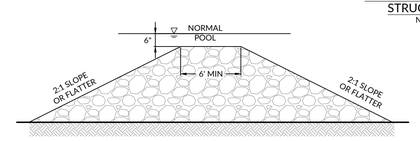
NOTE:
IF PIPE IS INSTALLED IN EXCAVATED TRENCH, THEN SIDE WALLS MAY CONFORM TO TRENCH (TRENCH MAY BE USED AS CRADLE FORM)

NOMINAL PIPE SIZE	DIM A" (½ D)	DIM B (PIPE ID)	DIM C (DIM A + 12")	SCM #
18	8	18	20	
24	8	24	20	
30	10	30	22	2, 3
36	12	36	24	1
42	14	42	26	
48	16	48	28	

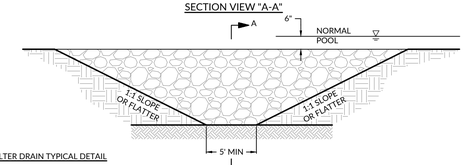
ALL DIMENSIONS IN INCHES
DIM A = 8" MINIMUM
18" MINIMUM PIPE DIAMETER

OUTLET PIPE, CONCRETE CRADLE, AND STONE BEDDING — DRAINAGE MISC

Scale:NTS — C8006



SECTION VIEW "A-A"



ELEVATION

FOREBAY FILTER DRAIN TYPICAL DETAIL

- BOTTOM WIDTH SHALL BE NO LESS THAN 5'
- USE NCDOT CLASS "B" RIP RAP TO FILL SPILLWAY
- SLOPES FROM SPILLWAY BOTTOM TO TOP OF BERM SHOULD BE NO STEEPER THAN 2:1

FOREBAY FILTER DRAIN DETAIL
NOT TO SCALE

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CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06
ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049163 BRANDON J. MILES
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

INITIAL PLAN DATE: 11/01/2024
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1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SCM DETAILS

C9.05

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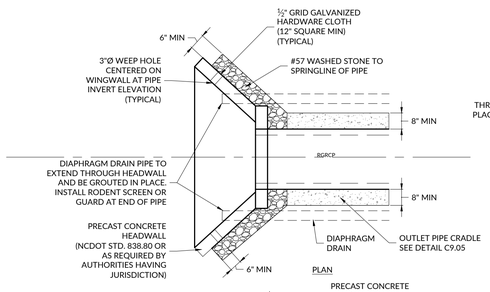
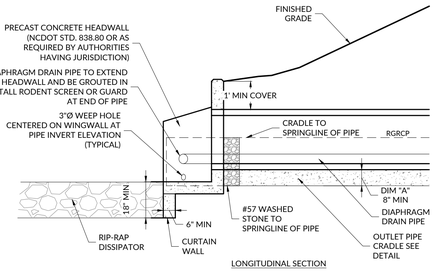
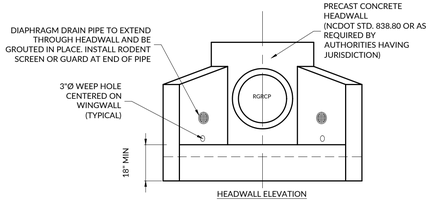


PLAN



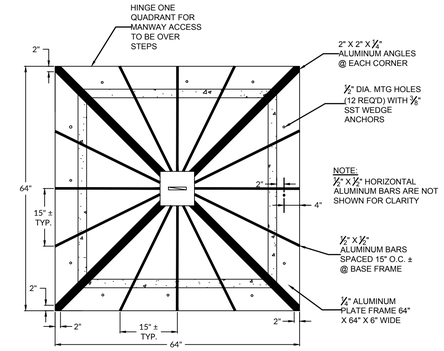
LONGITUDINAL SECTION



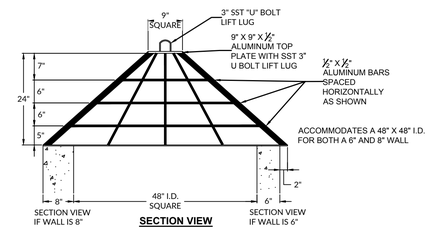
HEADWALL ELEVATION

NOMINAL PIPE SIZE	DIM A* (1/3 D)	DIM B (1/2 D + t)	DIM C (D + 2t)	DIM D (PIPE ID)	DIM E (DIM A + 12")	DIM t (WALL)	SCM #
18	8	11.5	23	18	20	2.5	
24	8	15.0	30	24	20	3.0	
30	10	18.5	37	30	22	3.5	3
36	12	22.0	44	36	24	4.0	1
42	14	25.5	51	42	26	4.5	
48	16	29.0	58	48	28	5.0	

ALL DIMENSIONS IN INCHES
*DIM A - 8" MINIMUM
18" MINIMUM PIPE DIAMETER



PLAN VIEW

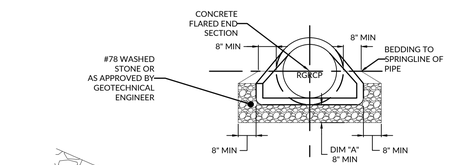


SECTION VIEW

NOTES

1. TRASH RACK DETAIL BASED ON POMONA PIPE PRODUCTS "STANDARD ALUMINUM BAR & ANGLE PEAKED ROOF TRASH RACK WITH ONE QUADRANT HINGED FOR MANWAY ACCESS TO FIT 48"x48" I.D. CONCRETE RISER WITH 6" OR 8" THICK WALLS".
2. TRASH RACK TO BE POWDER-COATED BLACK.
3. REQUIRES SS HARDWARE TO ATTACH TO RISER.

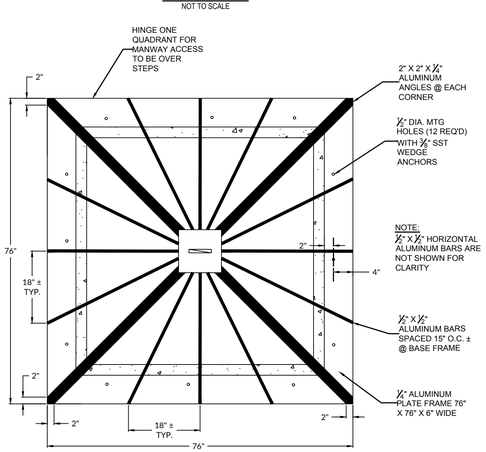
4' TRASH RACK
NOT TO SCALE



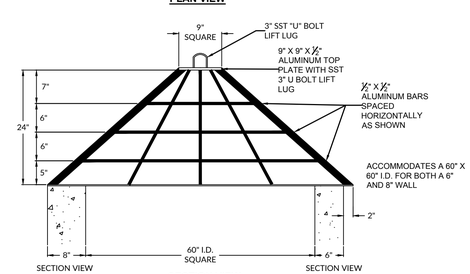
SECTION VIEW "A-A"

NOMINAL PIPE SIZE	DIM A* (⅓ D)	DIM B (PIPE ID)	DIM C (DIM A + 12")	SCM #
18	8	18	20	4
24	8	24	20	
30	10	30	22	2
36	12	36	24	
42	14	42	26	
48	16	48	28	

ALL DIMENSIONS IN INCHES
DIM A = 8" MINIMUM
18" MINIMUM PIPE DIAMETER



PLAN VIEW

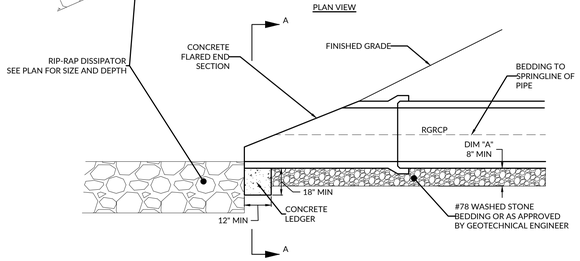


SECTION VIEW

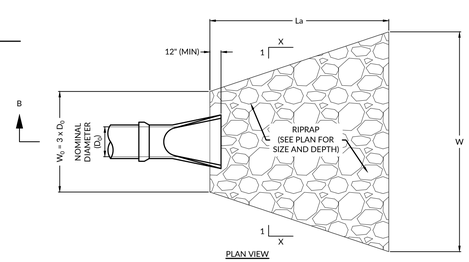
NOTES

1. TRASH RACK DETAIL BASED ON POMONA PIPE PRODUCTS "STANDARD ALUMINUM BAR & ANGLE PEAKED ROOF TRASH RACK WITH ONE QUADRANT HINGED FOR MANWAY ACCESS TO FIT 60"x60" I.D. CONCRETE RISER WITH 6" OR 8" THICK WALLS".
2. TRASH RACK TO BE POWDER-COATED BLACK.
3. REQUIRES SS HARDWARE TO ATTACH TO RISER.

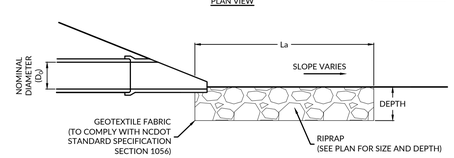
5' TRASH RACK
NOT TO SCALE



LONGITUDINAL SECTION VIEW



PLAN VIEW



SECTION VIEW "B-B"

OUTLET DETAIL (FLARED END SECTION) & RIPRAP VELOCITY DISSIPATOR
(ADAPTED FROM HEC-14 & NYSDOT)
NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL ENGINEER BRANDON J. MILLER
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WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SCM DETAILS

C9.06

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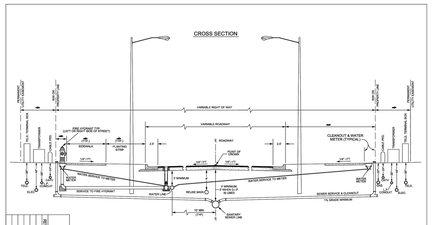
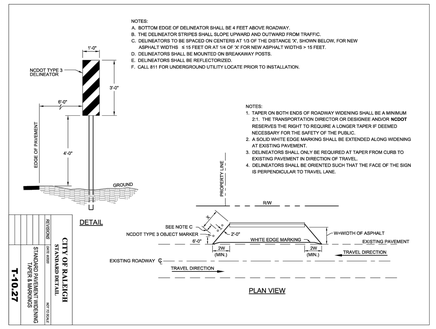
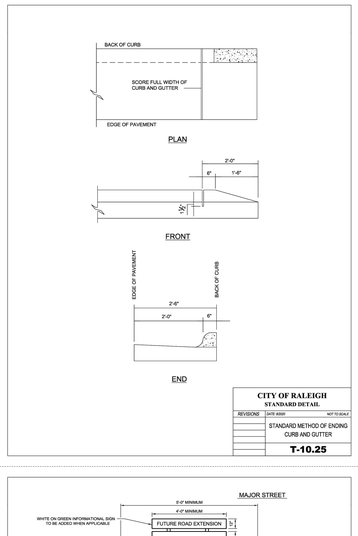


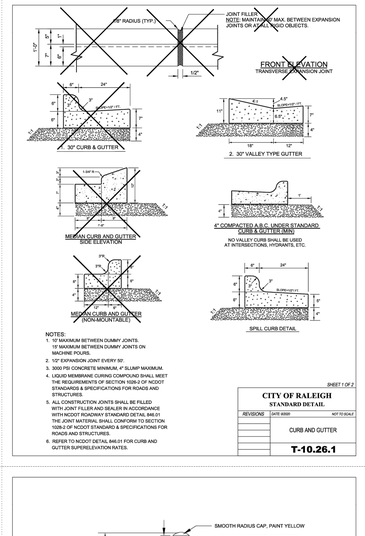
NOTES:
1. WATER AND/OR SANITARY SEWER LINES SHALL BE A MINIMUM OF TWO FEET FROM THE EDGE OF THE CURB AND GUTTER
2. ENCROACHMENT ONTO CITY MAINTAINED RIGHT OF WAY SHALL FOLLOW CONDITIONS OF THE APPLICABLE ENCROACHMENT AGREEMENT OR FRANCHISE AGREEMENT.
3. FOR HYDRANT LOCATION SEE PUBLIC UTILITIES STANDARD DETAIL W-4.
4. PUE TO BE EXPANDED ON A CASE BY CASE BASIS AS NEEDED TO ACCOMMODATE PRIVATE UTILITIES APPURTENANT FACILITIES AND EQUIPMENT.



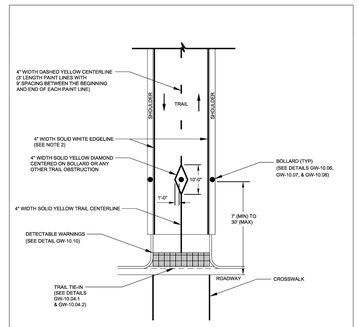
NOTES:
A. BOTTOM EDGE OF DELINEATOR SHALL BE 4 FEET ABOVE ROADWAY.
B. THE DELINEATOR STRIPES SHALL SLOPE UPWARD AND OUTWARD FROM TRAFFIC.
C. DELINEATORS TO BE SPACED ON CENTERS AT 1/3 OF THE DISTANCE 'K', SHOWN BELOW, FOR NEW ASPHALT WIDTHS: K 15 FEET OR AT 1/4 OF 'K' FOR NEW ASPHALT WIDTHS > 15 FEET.
D. DELINEATORS SHALL BE MOUNTED ON BREAKAWAY POSTS.
E. DELINEATORS SHALL BE REFLECTORIZED.
F. CALL 811 FOR UNDERGROUND UTILITY LOCATE PRIOR TO INSTALLATION.

NOTES:
1. TAPER ON BOTH ENDS OF ROADWAY WIDENING SHALL BE A MINIMUM 2:1. THE TRANSPORTATION DIRECTOR OR DESIGNEE AND/OR NCDOT RESERVES THE RIGHT TO REQUIRE A LONGER TAPER IF DEEMED NECESSARY FOR THE SAFETY OF THE PUBLIC.
2. A SOLID WHITE EDGE MARKING SHALL BE EXTENDED ALONG WIDENING AT EXISTING PAVEMENT.
3. DELINEATORS SHALL ONLY BE REQUIRED AT TAPER FROM CURB TO EXISTING PAVEMENT IN DIRECTION OF TRAVEL.
4. DELINEATORS SHALL BE ORIENTED SUCH THAT THE FACE OF THE SIGN IS PERPENDICULAR TO TRAVEL LANE.

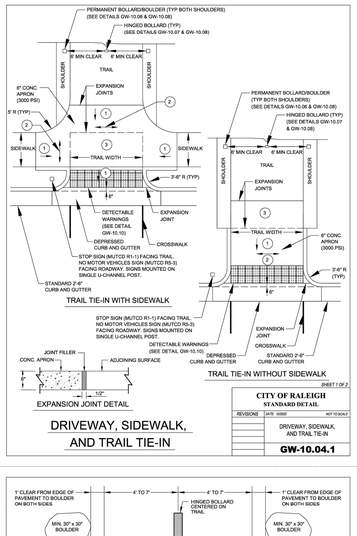


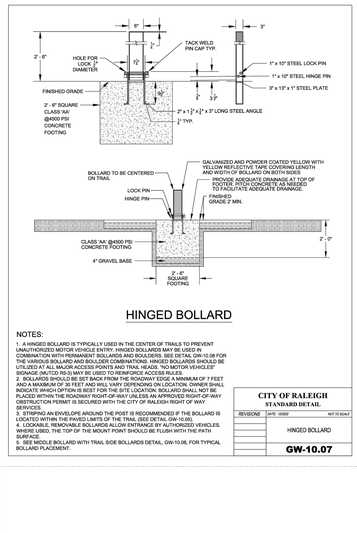


NOTES:
1. 10' MAXIMUM BETWEEN DUMMY JOINTS. 15' MAXIMUM BETWEEN DUMMY JOINTS ON MACHINE POURS.
2. 1/2" EXPANSION JOINT EVERY 50'.
3. 3000 PSI CONCRETE MINIMUM. 4" SLUMP MAXIMUM.
4. LIQUID MEMBRANE CURING COMPOUND SHALL MEET THE REQUIREMENTS OF SECTION 1026-3 OF NCDOT STANDARDS & SPECIFICATIONS FOR ROADS AND STRUCTURES.
5. ALL CONSTRUCTION JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER IN ACCORDANCE WITH NCDOT ROADWAY STANDARD DETAIL 846.01. THE JOINT MATERIAL SHALL CONFORM TO SECTION 1028-2 OF NCDOT STANDARD & SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. REFER TO NCDOT DETAIL 846.01 FOR CURB AND GUTTER SUPERELEVATION RATES.

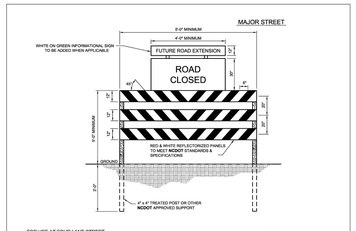


NOTES:
1. TRAIL STRIPING MATERIAL SHALL BE STANDARD ROAD PAINT UNLESS OTHERWISE NOTED. UTILIZE NON-SLIP/NON-SKID STRIPING MATERIALS TO AVOID HAZARDS WHEN TRAILS ARE WET.
2. TRAIL EDGELINE STRIPING IS REQUIRED PER THE CITY OF RALEIGH. 4" WIDTH DASHED YELLOW CENTERLINE STRIPE IS TYPICALLY USED. 4" WIDTH SOLID YELLOW CENTERLINES ARE RECOMMENDED ON TIGHT OR BLIND CORNERS, ON TRAIL SWITCHBACKS, AND ON THE APPROACHES TO ROADWAY CROSSINGS. 4" WIDTH SOLID WHITE EDGE LINES OFFSET 4" FROM EDGE OF TRAIL SHALL ONLY BE USED WHEN ADDITIONAL TRAIL WIDTH IS TYPICALLY REQUIRED WHEN THESE HAZARDOUS CONDITIONS ARE PRESENT.
3. STRIPING AN ENVELOPE AROUND THE BOLLARD POST WITH 4" SOLID YELLOW IS RECOMMENDED. SEE GW-10.06, GW-10.07, AND GW-10.08 FOR BOLLARD DETAILS.



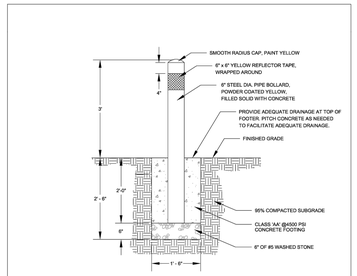


NOTES:
1. A HINGED BOLLARD IS TYPICALLY USED IN THE CENTER OF TRAILS TO PREVENT UNAUTHORIZED MOTOR VEHICLE ENTRY. HINGED BOLLARDS MAY BE USED IN COMBINATION WITH PERMANENT BOLLARDS AND BOULDERS. SEE DETAIL GW-10.08 FOR MIDDLE BOLLARD WITH TRAIL SIDE BOLLARDS DETAILS. HINGED BOLLARDS ARE UTILIZED AT ALL MAJOR ACCESS POINTS AND TRAIL HEADS. "NO MOTOR VEHICLES" SIGNAGE (MUTCD R5-3) MAY BE USED TO REINFORCE ACCESS RULES.
2. BOLLARDS SHOULD BE SET BACK FROM THE ROADWAY EDGE A MINIMUM OF 7 FEET AND A MAXIMUM OF 30 FEET AND WILL VARY DEPENDING ON LOCATION. OWNER SHALL INDICATE WHICH OPTION IS BEST FOR THE SITE LOCATION. BOLLARD SHALL NOT BE PLACED WITHIN THE ROADWAY RIGHT-OF-WAY UNLESS AN APPROVED RIGHT-OF-WAY OBSTRUCTION PERMIT IS SECURED WITH THE CITY OF RALEIGH RIGHT OF WAY SERVICES.
3. STRIPING AN ENVELOPE AROUND THE BOLLARD POST IS RECOMMENDED IF THE BOLLARD IS LOCATED WITHIN THE PAVED LIMITS OF THE TRAIL (SEE DETAIL GW-10.06).
4. SEE MIDDLE BOLLARD WITH TRAIL SIDE BOLLARDS DETAIL, GW-10.08, FOR TYPICAL BOLLARD PLACEMENT.



NOTES:
1. BARRICADE(S) TO BE ERECTED ACROSS ENTIRE ROADWAY INCLUDING CURB & GUTTER.
2. ADVANCE WARNING SIGN W14-1 (DEAD END) SHALL BE PLACED JUST AFTER LAST INTERSECTING STREET.
3. MARKINGS FOR BARRICADE RAILS SHALL BE REFLECTIVE AND ALTERNATE RED & WHITE STRIPS.
4. "ROAD CLOSED" SIGN SHALL MEET SPECIFICATIONS OF M.U.T.C.D. R11-2 AND BE REQUIRED ATOP EACH BARRICADE USED.
5. CALL 811 FOR UNDERGROUND UTILITY LOCATE PRIOR TO INSTALLATION.

CITY OF RALEIGH
STANDARD DETAIL
TEMPORARY BARRICADE FOR DEAD END ROADS
T-10.28



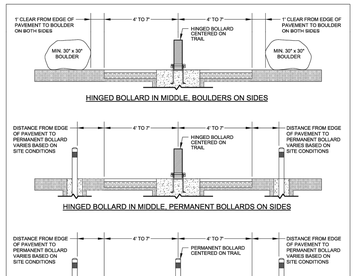
NOTES:
1. A PERMANENT BOLLARD IS TYPICALLY USED ON THE OUTSIDE OF TRAILS TO PREVENT UNAUTHORIZED MOTOR VEHICLE ENTRY. PERMANENT BOLLARDS MAY BE USED IN COMBINATION WITH HINGED BOLLARDS. IN SOME CASES, A PERMANENT BOLLARD CAN BE USED IN THE CENTER OF THE TRAIL IN LIEU OF A HINGED BOLLARD WHEN REQUESTED BY THE OWNER. SEE DETAIL GW-10.08 FOR THE VARIOUS BOLLARD COMBINATIONS. PERMANENT BOLLARDS SHOULD BE UTILIZED AT ALL MAJOR ACCESS POINTS AND TRAIL HEADS. "NO MOTOR VEHICLES" SIGNAGE (MUTCD R5-3) MAY BE USED TO REINFORCE ACCESS RULES.
2. BOLLARDS SHOULD BE SET BACK FROM THE ROADWAY EDGE A MINIMUM OF 7 FEET AND A MAXIMUM OF 30 FEET AND WILL VARY DEPENDING ON LOCATION. OWNER SHALL INDICATE WHICH OPTION IS BEST FOR THE SITE LOCATION. BOLLARD SHALL NOT BE PLACED WITHIN THE ROADWAY RIGHT-OF-WAY UNLESS AN APPROVED RIGHT-OF-WAY OBSTRUCTION PERMIT IS SECURED WITH THE CITY OF RALEIGH RIGHT OF WAY SERVICES.
3. STRIPING AN ENVELOPE AROUND THE POST IS RECOMMENDED IF THE BOLLARD IS LOCATED WITHIN THE PAVED LIMITS OF THE TRAIL (SEE DETAIL GW-10.06).
4. SEE MIDDLE BOLLARD WITH TRAIL SIDE BOLLARDS DETAIL, GW-10.08, FOR TYPICAL BOLLARD PLACEMENT.

DRIVEWAY, SIDEWALK, AND TRAIL TIE-IN - NOTES:

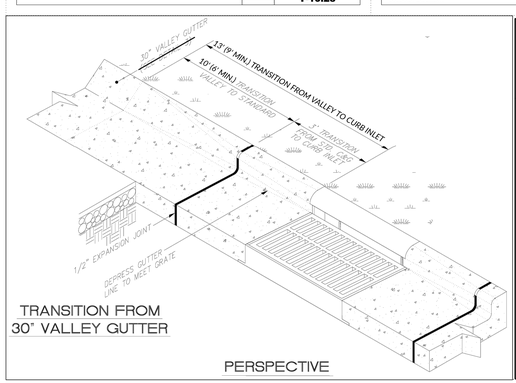
1. THE DRIVEWAY, SIDEWALK, TRAIL TIE-IN SHALL BE BUILT IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG).
2. THE DRIVEWAY, SIDEWALK, TRAIL TIE-IN SHALL BE PLACED PARALLEL TO THE TRAIL DIRECTION OF TRAVEL.
3. DETECTABLE WARNINGS SHALL BE INSTALLED ALONG THE BACK OF CURB COVERING THE FULL WIDTH OF THE RAMP.
4. FOR THE TRAIL APRON, USE CLASS A (3000 PSI) CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH, NONSKID SURFACE.
5. A 1/2" EXPANSION JOINT INSTALLED FULL DEPTH WILL BE REQUIRED WHERE THE CONCRETE RAMP JOINS THE CURB AND ALSO WHERE NEW CONCRETE ABUTS EXISTING CONCRETE.
6. REMOVE AND REPLACE CURB AND GUTTER TO NEAREST JOINT.
7. BOLLARDS/BOULDERS SHOULD BE SET BACK FROM THE ROADWAY EDGE A MINIMUM OF 7 FEET AND A MAXIMUM OF 30 FEET AND WILL VARY DEPENDING ON LOCATION. OWNER SHALL INDICATE WHICH OPTION IS BEST FOR THE SITE LOCATION. BOLLARD SHALL NOT BE PLACED WITHIN THE ROADWAY RIGHT-OF-WAY UNLESS AN APPROVED RIGHT-OF-WAY OBSTRUCTION PERMIT IS SECURED WITH THE CITY OF RALEIGH RIGHT OF WAY SERVICES. SEE DETAILS GW-10.06, GW-10.07, AND GW-10.08 FOR BOLLARD/BOULDER DETAILS.
8. STOP SIGN (MUTCD R1-1) AND NO MOTOR VEHICLES SIGN (MUTCD R5-3) SHALL BE 0.063 GAUGE, 3105 ALLOY ALUMINUM AND SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL GUIDELINES.

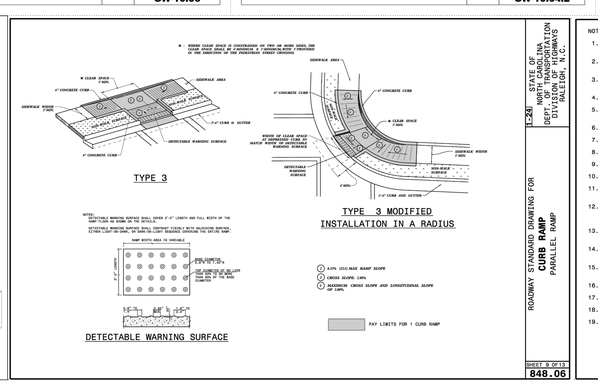
1. 8.33% (12:1) MAX RAMP SLOPE (DRAIN TO ROADWAY)
2. CROSS SLOPE: MAXIMUM 2.00%
3. RAMP REQUIRES 5.0' (5') MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN CURB.

SHEET 2 OF 2
CITY OF RALEIGH
STANDARD DETAIL
DRIVEWAY, SIDEWALK, AND TRAIL TIE-IN
GW-10.04.2



NOTES:
1. OWNER SHALL INDICATE WHICH OF THE THREE BOLLARD/BOULDER PLACEMENT OPTIONS IS BEST FOR THE SITE LOCATION.
2. HINGED BOLLARDS ARE UTILIZED TO PREVENTING UNAUTHORIZED MOTOR VEHICLE ENTRY AND SHOULD BE UTILIZED AT ALL MAJOR ACCESS POINTS AND TRAIL HEADS. "NO MOTOR VEHICLES" SIGNAGE (MUTCD R5-3) MAY BE USED TO REINFORCE ACCESS RULES.
3. BOLLARDS SHOULD BE SET BACK FROM THE ROADWAY EDGE A MINIMUM OF 7 FEET AND A MAXIMUM OF 30 FEET AND WILL VARY DEPENDING ON LOCATION. OWNER SHALL INDICATE WHICH OPTION IS BEST FOR THE SITE LOCATION. BOLLARD SHALL NOT BE PLACED WITHIN THE ROADWAY RIGHT-OF-WAY UNLESS AN APPROVED RIGHT-OF-WAY OBSTRUCTION PERMIT IS SECURED WITH THE CITY OF RALEIGH RIGHT OF WAY SERVICES.
4. STRIPING AN ENVELOPE AROUND THE POST IS RECOMMENDED IF THE BOLLARD IS LOCATED WITHIN THE PAVED LIMITS OF THE TRAIL (SEE DETAIL GW-10.05).





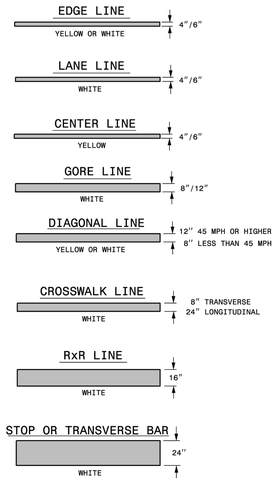
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY STANDARD DRAWING FOR CURB RAMP PARALLEL RAMP
SHEET 9 OF 13
848.06

NOTES:
1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' FROM THE BACK OF PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT CLEAR SPACES FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT CLEAR SPACES FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. IF CONSTRAINED ON TWO OR MORE SIDES, THE THE CLEAR SPACE SHALL BE 4' MINIMUM X 5' MINIMUM, WITH 5' PROVIDED IN THE DIRECTION OF THE PEDESTRIAN STREET CROSSING.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' CLEAR SPACE AT THE TOP OF RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP, WHERE THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE, OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01.
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. DETECTABLE WARNING SURFACES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
19. DETECTABLE WARNING SURFACES WILL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY STANDARD DRAWING FOR CURB RAMP NOTES
SHEET 13 OF 13
848.06

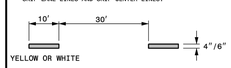
PULTEGROUP

CONTINUOUS LINES



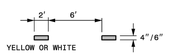
10'-30'/SP SKIP LINE

UNLESS OTHERWISED SHOWN, USE 10'-30'/SP SKIPS FOR SKIP LANE LINES AND SKIP CENTER LINES.



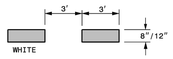
2'-6'/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 2'-6'/SP MINI-SKIPS FOR LANE LINE EXTENSIONS THROUGH INTERSECTIONS, EDGE LINE EXTENSIONS THROUGH INTERSECTIONS AND MINI-SKIPS USED FOR BICYCLE LANE LINES.



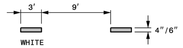
3'-3'/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3'-3'/SP MINI-SKIPS FOR THE WHITE EDGE LINE ENTENSIONS AT ROUNDABOUTS.



3'-9'/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3'-9'/SP MINI-SKIPS FOR MINI-SKIP LANE LINES AND LINE EXTENSIONS THROUGH TAPERS.



GENERAL NOTES:

1- USE 6" LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.

2- LANE LINES INDICATED AS "WIDE" ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

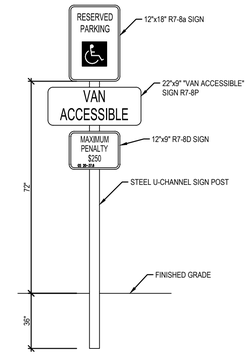
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

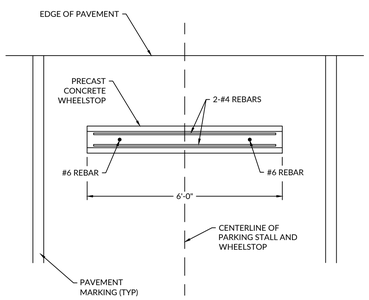
ROADWAY STANDARD DRAWING FOR
PAVEMENT MARKINGS
LINE TYPES AND OFFSETS

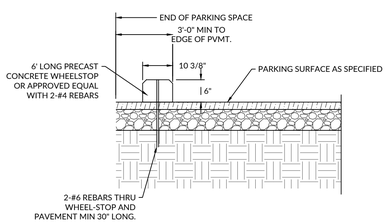
SHEET 1 OF 2
1205.01

NOTE:
1. R7-8D SIGNS ARE TO ACCOMPANY ALL R7-8a PARKING SIGNS
2. ALL SIGNS TO MEET CURRENT MUTCD STANDARDS FOR SIZE AND MATERIAL.

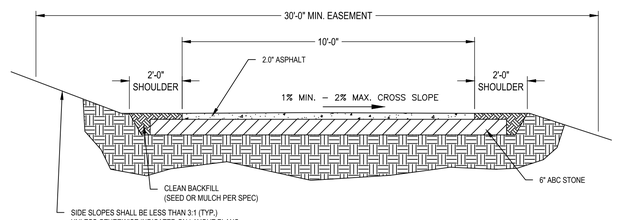


ADA "VAN ACCESSIBLE" SIGN ELEVATION
N.T.S.





WHEELSTOP — STREET
Scale:NTS — C3051

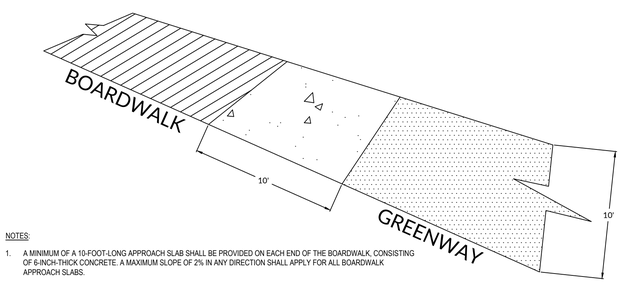


NOTES:

1. GREENWAYS SHALL MINIMIZE THE REMOVAL OF SIGNIFICANT TREES.
2. CROSS SLOPE DIRECTION VARIES. SEE GRADING PLANS FOR DIRECTION OF SLOPE.
3. CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL SLOPES DISTURBED BY CONSTRUCTION.
4. IF NATURAL DRAINAGE CROSSES TRAIL IN AN EROSIVE MANNER, ADDITIONAL MEASURES SHALL BE REQUIRED TO PASS WATER ACROSS GREENWAY.
5. VERTICAL CLEARANCE OF 8' FROM GREENWAY SURFACE TO LOWEST VEGETATION SHALL BE REQUIRED. SELECT REMOVAL OF VEGETATION THAT POSES MAINTENANCE ISSUES MAY BE REQUIRED.
6. GEOTEXTILE STABILIZATION FABRIC SHALL BE PLACED UNDER THE COMPACTED AGGREGATE BASE COURSE (ABC) THE ENTIRE LENGTH/WIDTH OF THE GREENWAY.

TYPICAL GREENWAY SECTION

DRAWING NOT TO SCALE



NOTES:

1. A MINIMUM OF A 10-FOOT-LONG APPROACH SLAB SHALL BE PROVIDED ON EACH END OF THE BOARDWALK, CONSISTING OF 6-INCH-THICK CONCRETE. A MAXIMUM SLOPE OF 2% IN ANY DIRECTION SHALL APPLY FOR ALL BOARDWALK APPROACH SLABS.
2. THE BOARDWALK SHALL BE A MINIMUM OF 10' WIDE OR MATCH THE ADJACENT GREENWAY WIDTH IF GREATER.
3. BOARDWALKS SHALL BE CONSTRUCTED WITH CONCRETE OR PRESSURE TREATED WOOD.
4. BOARDWALK CONSTRUCTION PLANS AND SPECIFICATIONS SHALL BE PREPARED AND SEALED BY A NORTH CAROLINA LICENSED ENGINEER AND SUBMITTED TO THE TOWN FOR APPROVAL PRIOR TO CONSTRUCTION. THE SEALING ENGINEER SHALL OBSERVE THE CONSTRUCTION AND, UPON PROJECT COMPLETION, SHALL PROVIDE A SEALED LETTER TO THE TOWN CERTIFYING THAT THE BOARDWALK WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

GREENWAY BOARDWALK DETAIL

DRAWING NOT TO SCALE

WithersRavenel
167 E. Chatham St. | Suite 210 | Cary, NC 27511
License #: F-14979 | t: 919.238.0330 | www.withersravenel.com
our people • your success

PULTEGROUP
1225 CRESCENT GREEN DRIVE, SUITE 250
CARY, NC 27518

CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06
ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
TERRENCE COOK

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SITE DETAILS

C10.01

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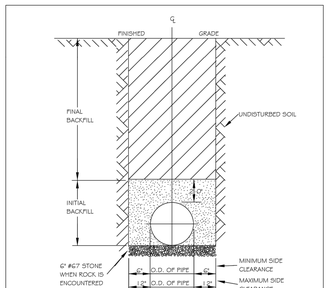
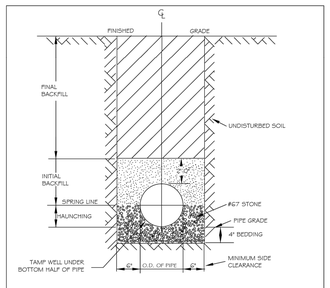


NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. ACHIEVE 90% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
6. 8" IN EASEMENT 4" TOPSOIL, AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
7. NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	D.W.C. RRH	9-3-99 3-30-00		

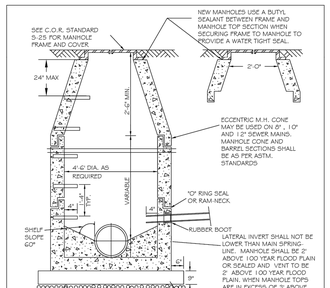


TYPICAL TRENCH BOTTOM DIMENSIONS FOR SDR 35 PVC GRAVITY PIPE

NOTES:
1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

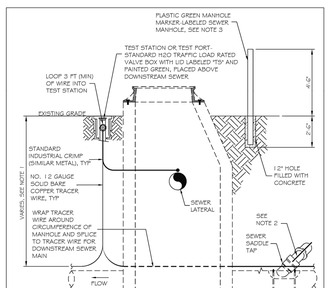
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-5	TO NOTES	5-1-87 7-2-87	D.W.C. RRH	9-3-99 3-30-00



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD PRECAST SANITARY SEWER MANHOLE

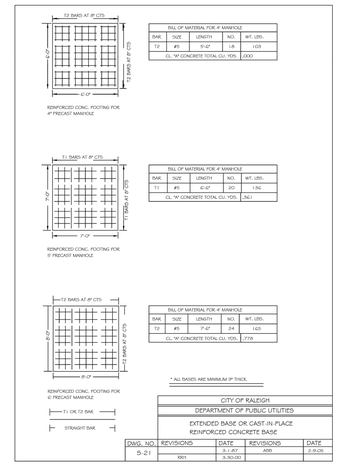
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20	Y.C.A. RRH	12-31-91 3-30-00	ABB D.H.L.	2-21-05 6-18-08



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY APPIXED TO THE PIPE AT +/0 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OR CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20A	WKD	09-14		



BAR	SIZE	LENGTH	NO.	WT. LBS.
T2	#5	5'-0"	14	1.03
CL. "A" CONCRETE TOTAL CU. YDS.				.000

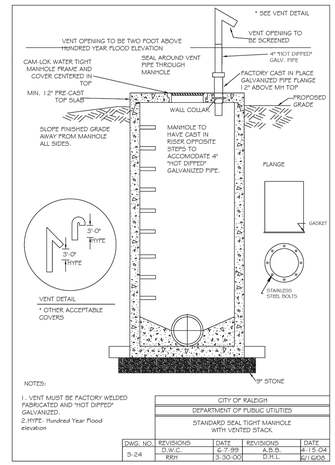
BAR	SIZE	LENGTH	NO.	WT. LBS.
T1	#5	6'-0"	20	1.24
CL. "A" CONCRETE TOTAL CU. YDS.				.061

BAR	SIZE	LENGTH	NO.	WT. LBS.
T2	#5	7'-4"	24	1.63
CL. "A" CONCRETE TOTAL CU. YDS.				.2.19

* ALL BARS ARE MINIMUM 9" THICK.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
EXTENDED BASE OR CAST-IN-PLACE REINFORCED CONCRETE BASE

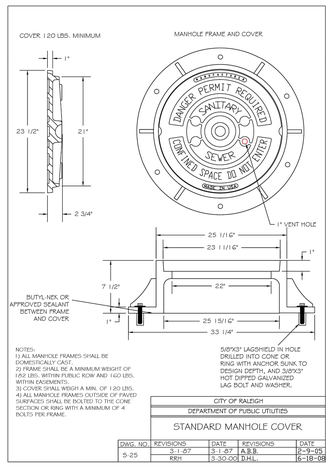
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-21	RRH	3-30-00	ARB	2-8-05



NOTES:
1. VENT MUST BE FACTORY WELDED FABRICATED AND "HOT DIPPED" GALVANIZED.
2. HYPE- Hundred Year Flood elevation

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD SEAL TIGHT MANHOLE WITH VENTED STACK

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-24	D.W.C. RRH	6-7-99 3-30-00	A.B.B. D.R.L.	4-15-04 5/1/05

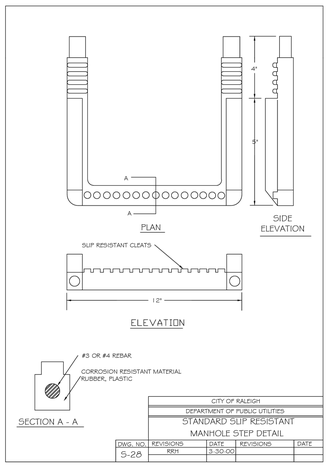


NOTES:
1) ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2) FRAME SHALL BE A MINIMUM WEIGHT OF 1,152 LBS. WITHIN PUBLIC ROW AND 1,620 LBS. WITHIN EASEMENTS.
3) COVER SHALL WEIGH A MIN. OF 120 LBS.
4) ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

5/8"X3" LAGSHIELD IN HOLE DRILLED INTO CONE OR RING WITH ANCHOR SUNK TO DESIGN DEPTH, AND 5/8"X3" HOT DIPPED GALVANIZED LAG BOLT AND WASHER.

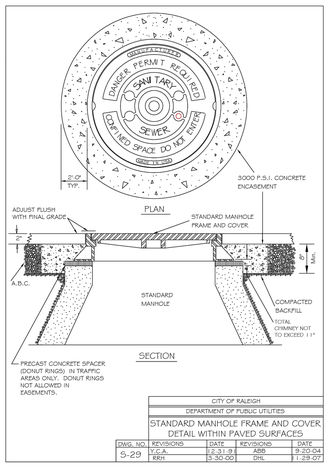
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD MANHOLE COVER

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25	3-1-87 RRH	3-1-87 3-30-00	A.B.B. D.H.L.	2-9-05 6-18-08



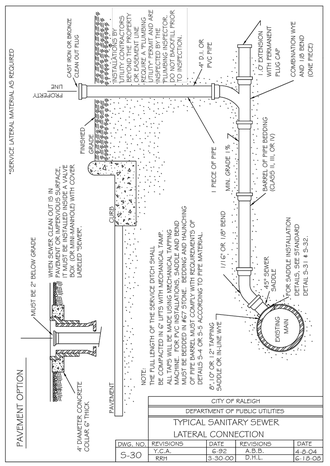
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD SLIP RESISTANT MANHOLE STEP DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-26	RRH	3-30-00		



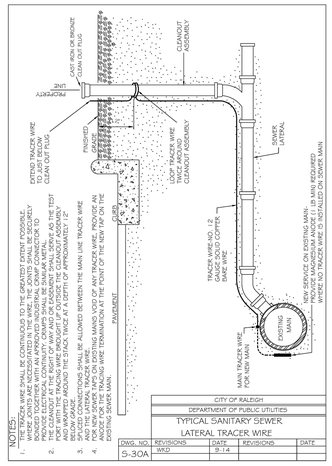
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN PAVED SURFACES

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-29	Y.C.A. RRH	12-31-91 3-30-00	ABB DHL	9-20-04 1-29-07



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL SANITARY SEWER LATERAL CONNECTION

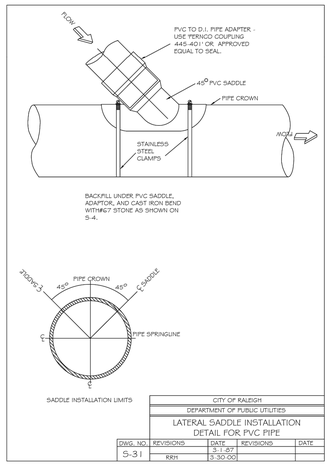
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30	Y.C.A. RRH	6-92 3-30-00	A.B.D. D.H.L.	4-8-04 6-18-08



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION LESS THAN 8 FT, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY APPIXED TO THE PIPE AT +/0 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OR CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.
4. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION LESS THAN 8 FT, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY APPIXED TO THE PIPE AT +/0 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OR CUTS IN THE TRACER WIRE SHALL BE PERMITTED.

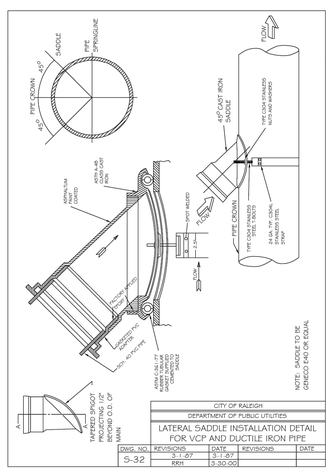
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL SANITARY SEWER LATERAL TRACER WIRE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30A	WKD	9-14		



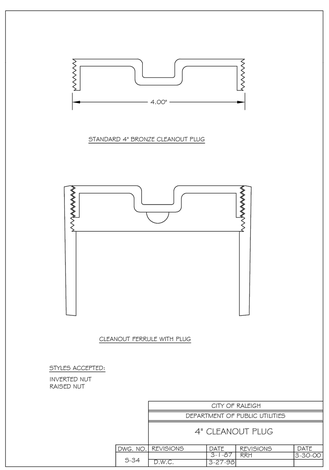
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-31	RRH	3-1-87 3-30-00		



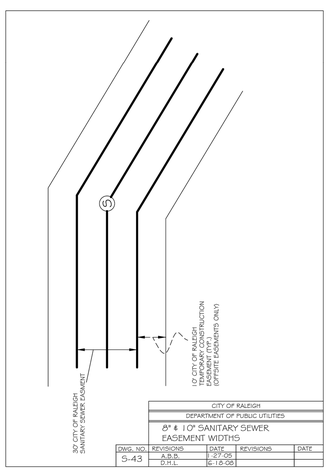
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
LATERAL SADDLE INSTALLATION DETAIL FOR VCP AND DUCTILE IRON PIPE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-32	3-1-87 RRH	3-1-87 3-30-00		



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
4" CLEANOUT PLUG

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-34	D.W.C.	3-1-87 3-27-95	RRH	3-30-00



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
8" & 10" SANITARY SEWER EASEMENT WIDTHS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-43	A.B.D. D.H.L.	3-27-95 6-18-08		

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CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06
ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039163 TERRENCE COOK
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025 REVISED PER REVIEW COMMENTS
2 - 03/03/2025 REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SEWER DETAILS

C10.02

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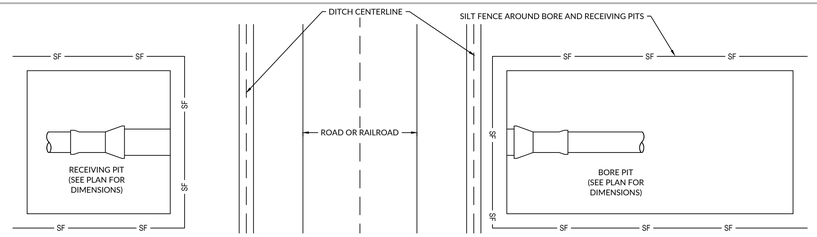
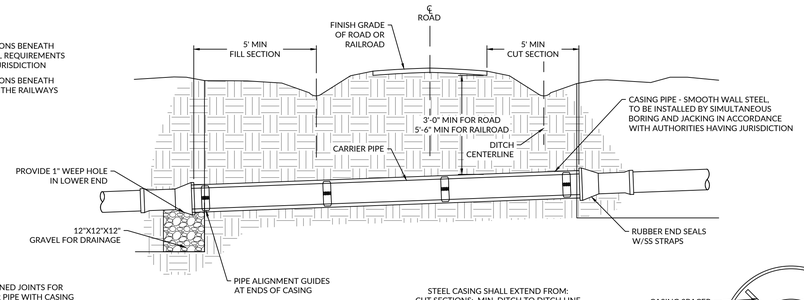
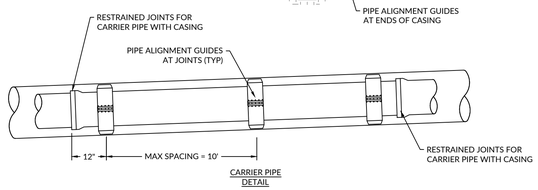


NOTES:

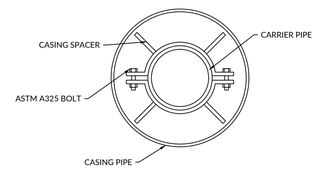
1. ALL BORE AND JACK INSTALLATIONS BENEATH ROADS SHALL COMPLY WITH ALL REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION
2. ALL BORE AND JACK INSTALLATIONS BENEATH RAILROAD SHALL COMPLY WITH THE RAILWAYS POLICIES AND PROCEDURES.





CARRIER PIPE
DETAIL

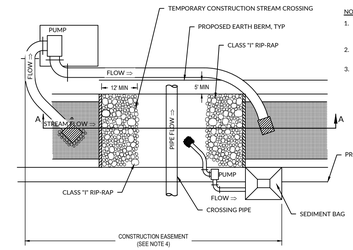
STEEL CASING SHALL EXTEND FROM:
CUT SECTIONS: MIN. DITCH TO DITCH LINE
FILL SECTIONS: 5 FT BEYOND TOE OF SLOPE
CURB SECTIONS: 3 FT BEYOND CURB



PIPE ALIGNMENT
GUIDE

BORE AND JACK
Scale:NTS

UTILITY TRENCHES
C5051



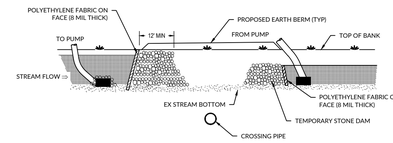
PLAN

NOTES:

1. EROSION STONE TO BE "CLASS I" RIP-RAP UNLESS DESIGNATED DIFFERENTLY ON CONSTRUCTION PLAN.
2. PUMP AND LINE SIZE TO BE DETERMINED BY THE CONTRACTOR.
3. WIDTH OF CONSTRUCTION EASEMENT SHALL BE MINIMIZED BASED UPON FIELD CONDITIONS. ANY DISTRUBANCE(S) EXCEEDING WHAT IS SHOWN ON PLANS MAY REQUIRE ADDITIONAL WATER QUALITY PERMITTING.

MAINTENANCE NOTES:

1. INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES ½ INCH OR MORE OF RAIN.
2. REMOVE SEDIMENT AND WOODY DEBRIS PROMPTLY.
3. REMOVE COLLECTED SEDIMENT FROM STONE/RIPRAP AREAS AS NECESSARY. TOPDRESS WITH 2", WASHED STONE AS NECESSARY.



SECTION A-A

CONSTRUCTION SEQUENCE

1. INSTALL PUMPS UPSTREAM OF TEMPORARY STREAM CROSSING AND PUMP TO AREA DOWNSTREAM OF CONSTRUCTION AREA. BEGIN PUMPING AND CONTINUE PUMPING WHILE WORKING WITHIN THE STREAM.
2. INSTALL UPSTREAM DAM AND DOWNSTREAM DAM WITH POLYETHYLENE FACING.
3. INSTALL EARTH BERMS ALONG TOP OF BANK ON EACH SIDE OF STREAM IN THE CONSTRUCTION AREA.
4. INSTALL SEDIMENT FILTER BAG AT TOP OF BANK. DEWATER CONSTRUCTION AREA BETWEEN STONE DAM USING THE FILTER BAG.
5. INSTALL THE NEW PIPELINE.
6. UPON CONSTRUCTION COMPLETION, REMOVE TEMPORARY DAMS, POLYETHYLENE, AND TEMPORARY CMP, DEPRESS TEMPORARY DAM BOTTOMS INTO STREAM BED UNTIL TOP OF RIP RAP IS LEVEL WITH STREAM BOTTOM.
7. REMOVE TEMPORARY EARTH BERM AND SEDIMENT BAGS AND STABILIZE AREAS AS INDICATED ON DRAWINGS.

TEMPORARY STREAM CROSSING BYPASS
Scale:NTS

RESIDENTIAL
C5070

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ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL SEAL TERRENCE COOK
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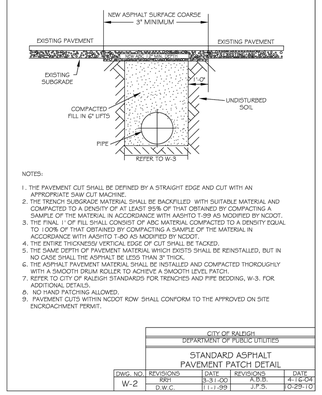
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

SEWER DETAILS

C10.03

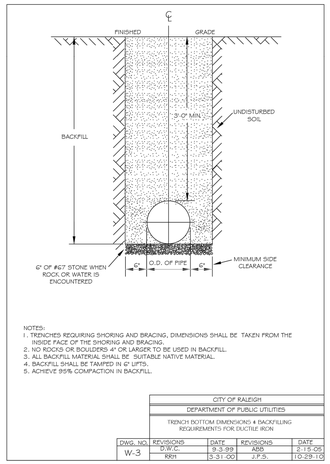
J:\23\0045-pulte_wendell assemblage\CADD\drawing sets\construction\C10.00-10.06 SITE DETAILS.dwg Thursday, February 27, 2025 5:00:37 PM - TCOOK



NOTES:
1. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROPRIATE SAW CUT MACHINE.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
3. THE FINAL 1'-0" OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-180 AS MODIFIED BY NCDOT.
4. THE ENTIRE THICKNESS VERTICAL EDGE OF CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
7. REFER TO CITY OF RALEIGH STANDARDS FOR TRENCHES AND PIPE BEDDING, W-3, FOR ADDITIONAL DETAILS.
8. NO HAND PATCHING ALLOWED.
9. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD ASPHALT PAVEMENT PATCH DETAIL

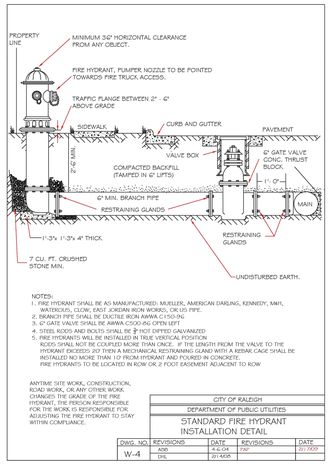
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2	RKH	3-31-00	A.B.B.	4-19-04
	D.W.C.	11-1-99	J.F.S.	10-29-10



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-3	D.W.C.	9-9-99	ABB	2-15-08
	RKH	3-31-00	J.F.S.	10-29-10

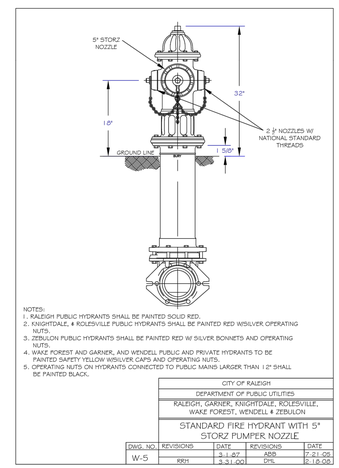


NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, MIH, WATERIDGE, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150/A6
3. 6" GATE VALVE SHALL BE AWWA C500/A6 OPEN LEFT
4. STEEL RODS AND BOLTS SHALL BE 2" HOT DIPPED GALVANIZED
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION
   RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A KEBAK CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
   FIRE HYDRANTS TO BE LOCATED IN ROW OR 2' FOOT EASEMENT ADJACENT TO ROW

ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD FIRE HYDRANT INSTALLATION DETAIL

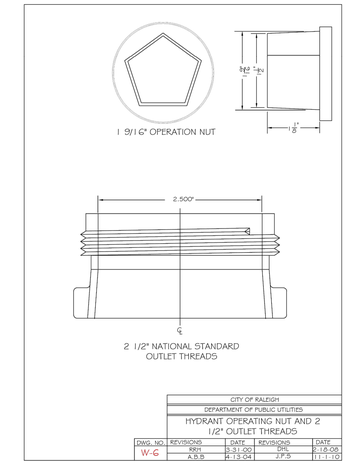
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	ABB	4-6-04	TKF	07/2009
	DHL	2014GR		



NOTES:
1. RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED.
2. KNIGHTDALE, # ROLESVILLE PUBLIC HYDRANTS SHALL BE PAINTED RED W/SILVER OPERATING NUTS.
3. ZEBULON PUBLIC HYDRANTS SHALL BE PAINTED RED W/ SILVER BONNETS AND OPERATING NUTS.
4. WAKE FOREST AND GARNER, AND WENDELL PUBLIC AND PRIVATE HYDRANTS TO BE PAINTED SAFETY YELLOW W/SILVER CAPS AND OPERATING NUTS.
5. OPERATING NUTS ON HYDRANTS CONNECTED TO PUBLIC MAINS LARGER THAN 12" SHALL BE PAINTED BLACK.

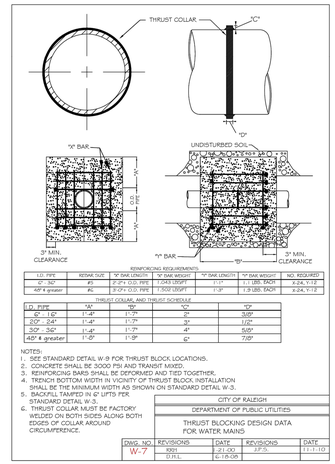
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
RALEIGH, GARNER, KNIGHTDALE, ROLESVILLE, WAKE FOREST, WENDELL & ZEBULON
STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-5		3-1-07	ABB	2-21-08
	RKH	3-31-00	DHL	2-16-08



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
HYDRANT OPERATING NUT AND 2 1/2" OUTLET THREADS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-6	RKH	3-31-00	DHL	2-16-08
	A.B.B.	4-13-04	J.F.S.	11-1-10



REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"A" BAR LENGTH	"B" BAR WEIGHT	"C" BAR LENGTH	"C" BAR WEIGHT	NO. REQUIRED
4" - 30"	#3	2'-0" x O.D. PIPE	1.04LBS/FT	1'-0"	1.1 LBS. EACH	x-24, Y-12
42" & greater	#6	3'-0" x O.D. PIPE	1.50LBS/FT	1'-3"	1.3 LBS. EACH	x-24, Y-12

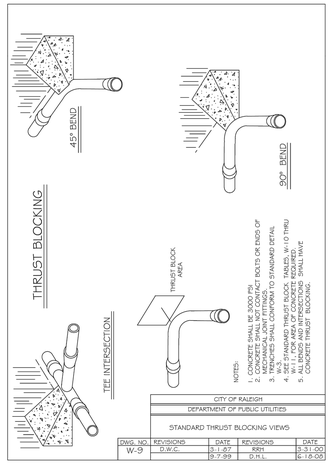
THRUST COLLAR AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C"
4" - 12"	1'-4"	1'-7"	5"
20" - 24"	1'-4"	1'-7"	4"
30" - 36"	1'-4"	1'-7"	4"
42" & greater	1'-6"	1'-9"	6"

NOTES:
1. SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3000 PSI TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS PER STANDARD DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN DATA FOR WATER MAINS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-7	RKH	1-21-00	J.F.S.	11-1-10
	D.H.L.	6-18-08		



NOTES:
1. CONCRETE SHALL BE 3000 PSI.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
3. TRENCHES SHALL CONFORM TO STANDARD DETAIL W-3.
4. SEE STANDARD THRUST BLOCK TABLES, W-10 THRU W-14 FOR CONCRETE REQUIREMENTS.
5. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCKING VIEWS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-9	D.W.C.	11-1-07	RKH	3-31-00
		9-7-99	D.H.L.	6-18-08

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.
ALL AREAS GIVEN IN SQUARE FEET.

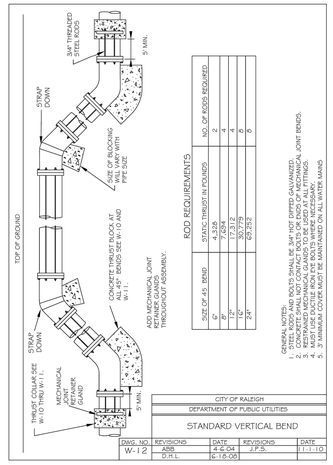
SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	SOFT CLAYEY SILT OR ORGANIC CLAY AND TURBIDITY	SOFT CLAY, MOD. PLASTICITY	SOFT CLAY, MOD. PLASTICITY SANDY SILT	LOOSE SAND, LOW DENSITY	LOOSE SAND, MED. DENSITY	SANDY CLAY, VERY STIFF	SANDY CLAY, STIFF	SANDY CLAY, MED. STIFF	SANDY CLAY, SOFT
6"										
11 1/4°	1,100	1	1	1	1	1	1	2	1	
22 1/2°	2,207	1	2	2	1	1	1	3	1	
45°	4,328	2	3	3	1	1	2	5	1	
90°	7,996	2	4	5	1	1	2	8	1	
PLUG	5,655	2	3	4	1	1	2	6	1	
8"										
11 1/4°	1,970	1	1	2	1	1	1	2	1	
22 1/2°	3,922	1	2	3	1	1	1	4	1	
45°	7,694	2	4	5	1	1	2	8	1	
90°	14,215	4	8	9	2	2	4	15	2	
PLUG	10,053	3	5	6	2	2	3	10	1	
12"										
11 1/4°	4,433	2	3	3	1	1	2	5	1	
22 1/2°	8,826	3	5	6	2	2	3	9	1	
45°	17,312	5	9	11	3	3	5	18	2	
90°	31,983	8	16	19	4	4	8	32	4	
PLUG	22,619	6	12	14	3	3	6	23	3	
16"										
11 1/4°	7,881	2	4	5	1	1	2	8	1	
22 1/2°	15,691	4	8	10	2	2	4	16	2	
45°	30,779	8	16	19	4	4	8	31	4	
90°	56,861	15	29	35	8	8	15	57	6	
PLUG	40,213	10	21	25	5	5	10	41	5	

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 0°-90 BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN QUANTITY TABLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10	D.W.C.	2-23-99		



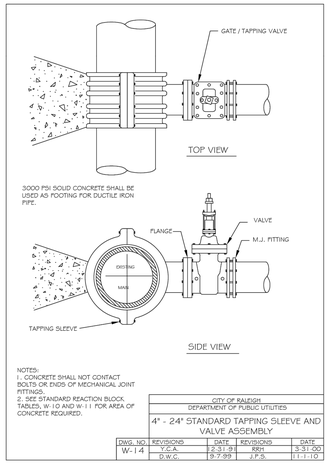
ROD REQUIREMENTS

SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
4"	4,328	2
6"	7,694	4
8"	14,215	4
10"	30,779	6
12"	22,252	6
24"		

GENERAL NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. SEE STANDARD THRUST BLOCK, TABLES W-10 AND W-11 FOR CONCRETE RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
3. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
4. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL WATER MAINS

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD VERTICAL BEND

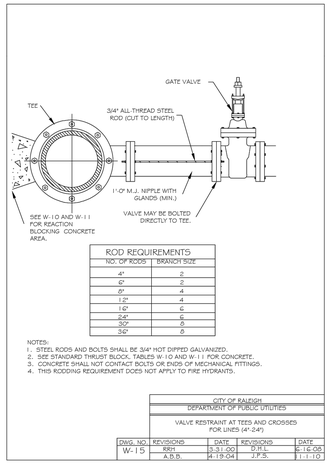
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-12	ABB	4-6-04	J.F.S.	11-1-10
	D.H.L.	6-18-08		



NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	Y.C.A.	2-21-91	RKH	3-31-00
	D.W.C.	9-7-99	J.F.S.	11-1-10



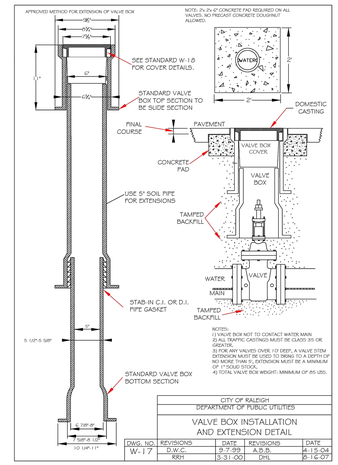
ROD REQUIREMENTS

NO. OF RODS	BRANCH SIZE
4"	2
6"	2
8"	4
12"	4
16"	6
24"	6
30"	8
36"	8

NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. SEE STANDARD THRUST BLOCK, TABLES W-10 AND W-11 FOR CONCRETE.
3. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
4. THIS RODDING REQUIREMENT DOES NOT APPLY TO FIRE HYDRANTS.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4"-24")

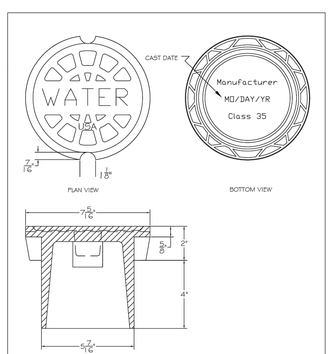
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-15	RKH	3-31-00	D.H.L.	6-16-08
	A.B.B.	4-19-04	J.F.S.	11-1-10



NOTES:
1) VALVE BOX NOT TO CONTACT WATER MAIN.
2) ALL TRAFFIC CAST/NGS MUST BE CLASS 35 OR GREATER.
3) FOR ANY VALVES OVER 10' DEEP, A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF NO MORE THAN 5'. EXTENSION MUST BE A MINIMUM OF 5' IN LENGTH.
4) TOTAL VALVE BOX WEIGHT: MINIMUM OF 85 LBS.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
VALVE BOX INSTALLATION AND EXTENSION DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-17	D.W.C.	9-7-99	A.B.B.	4-15-04
	RKH	3-31-00	DHL	8-16-07

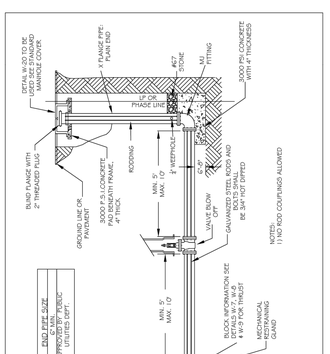


NOTE 1 - 'WATER' LETTERING MUST BE 1" RAISED (RECESSED FLUSH)
NOTE 2 - VALVE COVER SHALL BE DOMESTICALLY CAST.
NOTE 3 - COVER MUST HAVE A MINIMUM WEIGHT OF 25 POUNDS.
NOTE 4 - COVER MUST BE CLASS 35 OR GREATER.
NOTE 5 - COVER MUST MEET OR EXCEED AASHTO H-20 LOAD REQUIREMENTS.

MAIN SIZE (12" & GREATER)	END PIPE SIZE (APPROVED BY PUBLIC UTILITIES DEPT.)
6" - 12"	

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
5 1/4" VALVE BOX DROP LID WITH 4" SKIRT

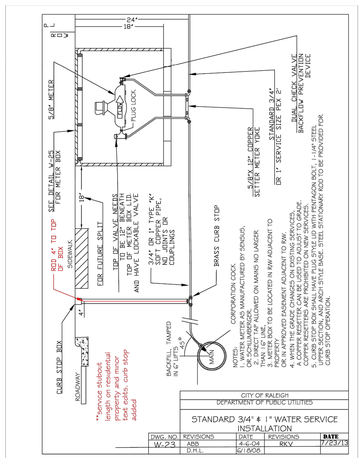
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-18				



MAIN SIZE (12" & GREATER)	END PIPE SIZE (APPROVED BY PUBLIC UTILITIES DEPT.)
6" - 12"	

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TEMPORARY WATER MAIN BLOW OFF ASSEMBLY

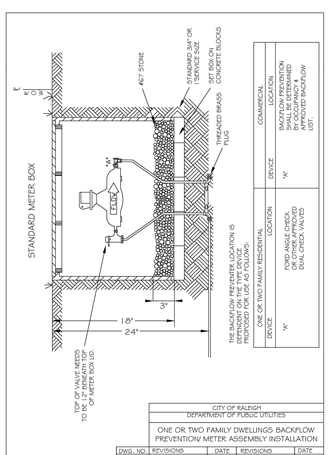
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-21	D.W.C.	2-23-99	A.B.B.	4-12-04
	RKH	3-31-00	DHL	8-16-07



NOTES:
1. WATER METER AS MANUFACTURED BY SENSUS, SIZE AS SHOWN.
2. DIRECT 3/4" ALLOWED ON MAINS NO LARGER THAN 1" PVC.
3. METER BOX TO BE LOCATED IN R/W ADJACENT TO PROPERTY.
   OR, IN APPROVED EASEMENT ADJACENT TO R/W IF ACCESS CAN BE GRANTED FOR SERVICES.
4. A COPPER REDSTER CAN BE USED TO ADJUST TO GRADE.
5. CURB STOP BOX SHALL HAVE PLUG STYLE LID WITH FRYNGION ROLL-TOP STYLE LID OR EQUAL. CURB STOP SHALL BE EMPIRE STEEL SHAVEHOOK ROD TO BE PROVIDED FOR CURB STOP OPERATION.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD 3/4" & 1" WATER SERVICE INSTALLATION

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-23	ABB	4-6-04	RKV	7/23/13
	D.H.L.	10/2005		



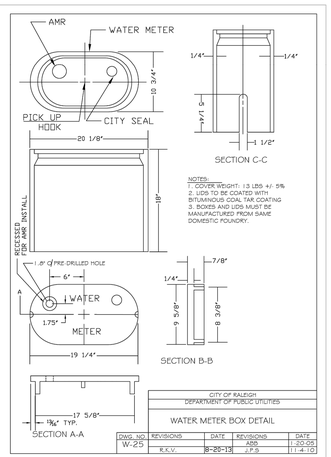
COMMERCIAL	
LOCATION	BACKFLOW PREVENTION SHALL BE DETERMINED BY THE CITY OF RALEIGH APPROVED BACKFLOW LIST.
DEVICE	"A"

ONE OR TWO FAMILY RESIDENTIAL	
LOCATION	POND ANGLE CHECK, DOUBLE CHECK, DUAL CHECK VALVES
DEVICE	"A"

THE BACKFLOW PREVENTER LOCATION IS DETERMINED BY THE SERVICE PROPOSED FOR USE AS FOLLOWS:

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
ONE OR TWO FAMILY DWELLINGS BACKFLOW PREVENTION METER ASSEMBLY INSTALLATION

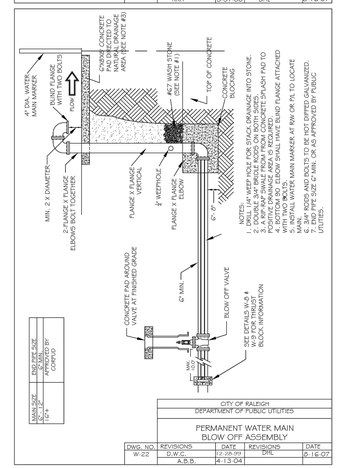
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-24	Y.C.A.	2-21-91	D.H.L.	6/15/08
	A.B.B.	4-7-04	J.F.S.	11/4/10



NOTES:
1. COVER WEIGHT: 13 LBS +/- 5%
2. LIDS TO BE COATED WITH BITUMINOUS COAL TAR COATING
3. BOXES AND LIDS MUST BE MANUFACTURED FROM SAME DOMESTIC FOUNDRY.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
WATER METER BOX DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-25	R.K.V.	8-25-13	ABB	1-20-08
			J.F.S.	11-4-10



NOTES:
1. DRILL 1/4" WEEP HOLE FOR STACK DRAINAGE INTO STONE.
2. ALL FITTINGS TO BE CLASS 350 DUCTILE IRON PIPE.
3. A 10' PIPE SHALL BE FROM FLANGE TO FLANGE.
4. BOTTOM OF BLOW OFF SHALL HAVE BLIND FLANGE ATTACHED WITH 2" THREADED PLUG.
5. INSTALL WATER MAIN MARKER AT R/W OR IN LOCATE WITH THE WATER MAIN.
6. 5/8" RODS AND BOLTS TO BE HOT DIPPED GALVANIZED.
7. END PIPE SIZE 6" MIN. OR AS APPROVED BY PUBLIC UTILITIES.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
PERMANENT WATER MAIN BLOW OFF ASSEMBLY

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-22	D.W.C.	12-20-99	DHL	5-16-07
	A.B.B.	4-13-04		

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CARY, NC 27518

CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06
ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
TERRENCE COOK

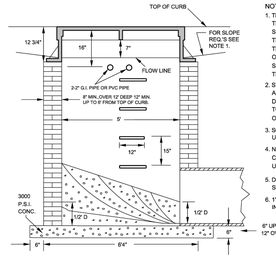
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

WATER DETAILS

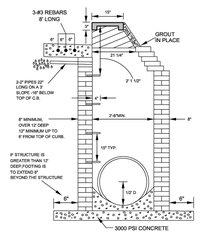
C10.04

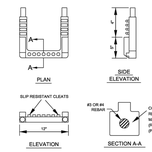
J:\23\0045-pulte_wcrdfarl assemblage\CAD\drawing set\construction\C10.00-10.04 SITE DETAILS.dwg Thursday, February 27, 2025 5:00:00 PM - TCOOK



NOTES:
1. THE SLOPE OF THE GUTTER TO THE CATCH BASIN ON THE UPHILL SIDE SHALL BEGIN 10' FROM THE CATCH BASIN. THE SLOPE OF THE GUTTER TO THE CATCH BASIN ON THE DOWNHILL SIDE, SHALL BEGIN 10' FROM THE CATCH BASIN.
2. STEPS SHALL BE INSTALLED IN ALL CATCH BASINS OVER 3' IN DEPTH. DEPTH SHALL BE MEASURED FROM THE TOP OF CURB TO THE INVERT OF THE CATCH BASIN.
3. SOLID CONCRETE BRICKS MAY BE USED IN 4X4X8 OR 4X8X16 SIZES.
4. NCDOT APPROVED PRECAST CONCRETE BOXES ACCEPTABLE USING STANDARD 5' CASTINGS.
5. DOMESTIC CASTING REQUIRED WITHIN STREET RIGHT OF WAY.
6. 1" MAXIMUM EXTENSION OF PIPE INTO THE STORM BOX.

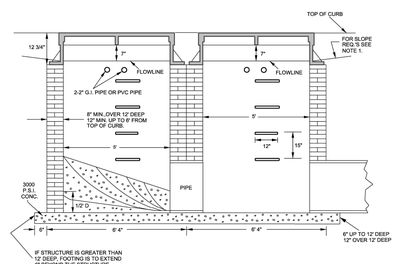
STANDARD C.B. STEP





CITY OF RALEIGH
STANDARD DETAIL

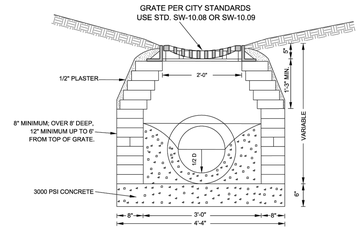
REVISIONS	DATE: 8/2020	NOT TO SCALE
	5' OM CATCH BASIN	
	SW-10.01	

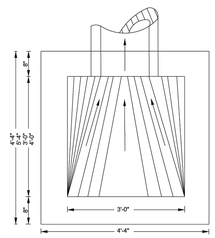


NOTES:
1. THE SLOPE OF THE GUTTER TO THE CATCH BASIN ON THE UPHILL SIDE SHALL BEGIN 10' FROM THE CATCH BASIN. THE SLOPE OF THE GUTTER TO THE CATCH BASIN ON THE DOWNHILL SIDE , SHALL BEGIN 10' FROM THE CATCH BASIN.
2. STEPS SHALL BE INSTALLED IN ALL CATCH BASINS OVER 3' IN DEPTH. DEPTH SHALL BE MEASURED FROM THE TOP OF CURB TO THE INVERT OF THE CATCH BASIN.
3. SOLID CONCRETE BRICKS MAY BE USED IN 4" X 4" X 10" OR 4" X 8" X 16" SIZES.
4. NCDOT APPROVED PRECAST CONCRETE BOXES ACCEPTABLE, USING STANDARD 5' CASTINGS.
5. DOMESTIC CASTING REQUIRED WITHIN STREET RIGHT OF WAY.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	DOUBLE WIDTH CATCH BASIN	
	SW-10.02	

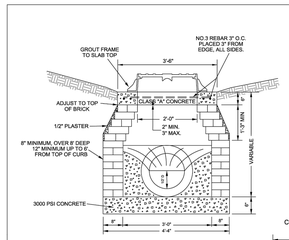




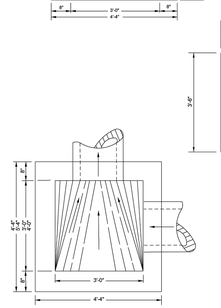
NOTES:
1. FOR 24" RCP & LARGER USE PIPE DIAMETER PLUS 12" FOR MINIMUM INSIDE DIMENSION.
2. 24" X 24" CASTING WITH 12", 15" & 18" PIPE, 24" X 36" CASTING USED WITH 24" PIPE OR LARGER, IF PLACED WITHIN PUBLIC R/W CASTING MUST BE TRAFFIC BEARING TYPE PER NCDOT STANDARDS.
3. USE 4" X 4" X 8" OR 4" X 8" X 16" SOLID CONCRETE BLOCK, CAST IN PLACE OR PRECAST CONCRETE TO MEET N.C.D.O.T. STANDARDS ACCEPTABLE.
4. STEPS SHALL BE INSTALLED IN ALL DROP INLETS OVER 3' IN DEPTH. DEPTH SHALL BE MEASURED FROM THE TOP OF GRATE TO THE INVERT OF THE DROP INLET.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	STANDARD DROP INLET	
	SW-10.03	

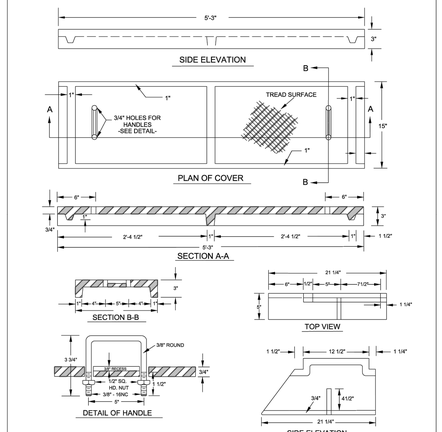


NOTES:
1. FOR 24" PIPE & LARGER USE PIPE DIAMETER PLUS 12" FOR MINIMUM INSIDE DIMENSION.
2. USE 4" X 4" X 8" OR 4" X 8" X 16" SOLID CONCRETE BLOCK, CAST IN PLACE OR PRECAST CONCRETE TO MEET NCDOT STANDARDS ACCEPTABLE.
3. FOR STEP REQUIREMENTS, SEE NOTE 4 ON STANDARD DETAIL SW-10.03.



CITY OF RALEIGH
STANDARD DETAIL

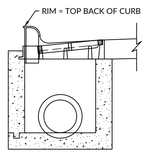
REVISIONS	DATE: 8/2020	NOT TO SCALE
	STANDARD JUNCTION BOX	
	SW-10.04	



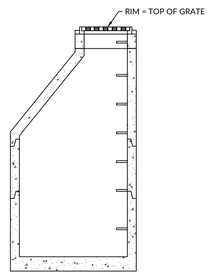
SHEET 1 OF 2

CITY OF RALEIGH
STANDARD DETAIL

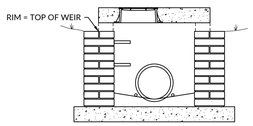
REVISIONS	DATE: 8/2020	NOT TO SCALE
	CATCH BASIN CASTINGS	
	SW-10.06.1	



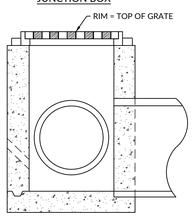
CATCH BASIN



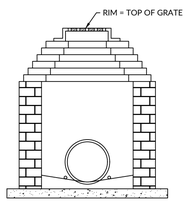
JUNCTION BOX



SLAB TOP YARD INLET



DROP INLET

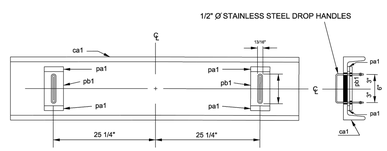


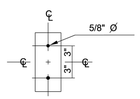
YARD INLET

NOTES:
1. THIS DETAIL IS PROVIDED TO CLARIFY RIM ELEVATIONS ONLY.
2. REFER TO OTHER DETAILS AS APPROPRIATE FOR DETAILED REQUIREMENTS.

STRUCTURE RIM ELEVATIONS — STORM DRAINAGE COLLECTION SYSTEMS

Scale:NTS — C8013





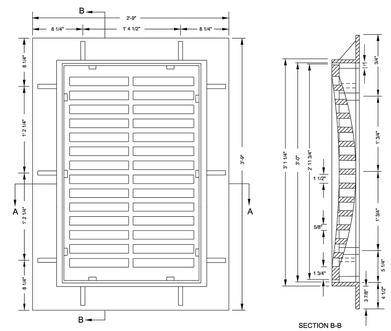
DETAIL OF pb1 PLATES

NOTES:
PAINT WITH RUST INHIBITING BLACK PAINT.

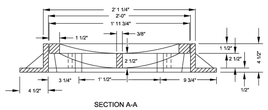
BILL OF MATERIAL		
MATERIAL LIST FOR ONE UNIT - MAKE ( ) UNITS		
1	C15 X 33.9# CHANNEL 62 1/2"	MK-ca1
4	1/8" X 1" H.R. FLAT BAR 3"	MK-pa1
2	3/8" x 3" H.R. FLAT BAR 10"	MK-pb1
2	1/2" STAINLESS STEEL ROUND ROD 18"	
8	1/2" STAINLESS STEEL HEX NUTS	
4	1/2" STAINLESS STEEL FLAT WASHERS	

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	CATCH BASIN STEEL TOP	
	SW-10.07	



SECTION B-B



SECTION A-A

STANDARD 24" X 36" DROP INLET CASTING

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	STANDARD DROP INLET CASTING	
	SW-10.09	

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CONSTRUCTION INFRASTRUCTURE DRAWINGS
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CID-24-06
ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER LAWRENCE COGAN
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

STORM DRAINAGE DETAILS

C10.05

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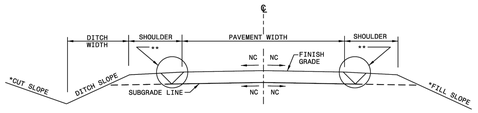
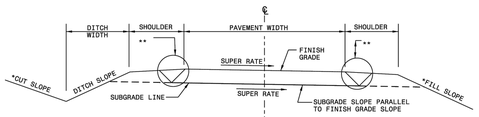


TYPICAL NORMAL CROWN SECTION



*SEE PLANS FOR METHOD OF CONSTRUCTING CUT AND FILL SLOPES.

** TRENCH OR GRADED SECTION. SEE PLANS.

TYPICAL SUPERELEVATED SECTION

STATE OF NORTH CAROLINA
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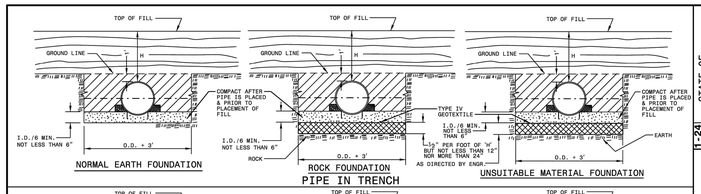
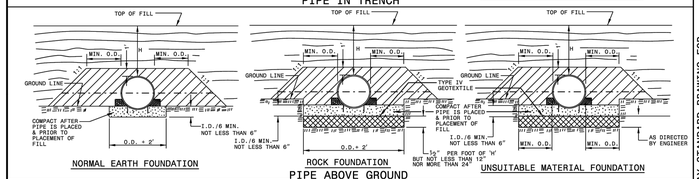
1-24

ROADWAY STANDARD DRAWING FOR
GUIDE FOR GRADING SUBGRADE
SECONDARY AND LOCAL

SHEET 1 OF 1
225.02





GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

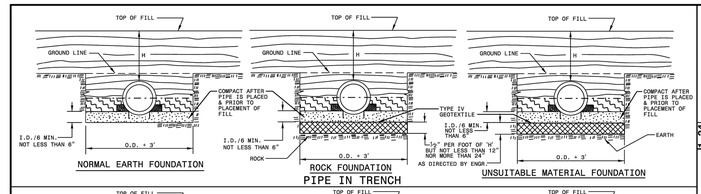
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

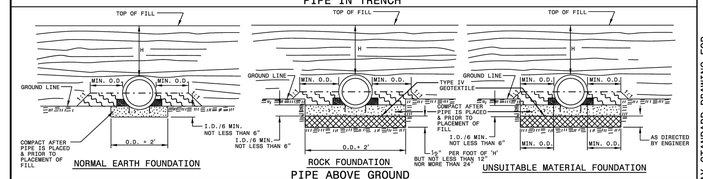
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01





GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

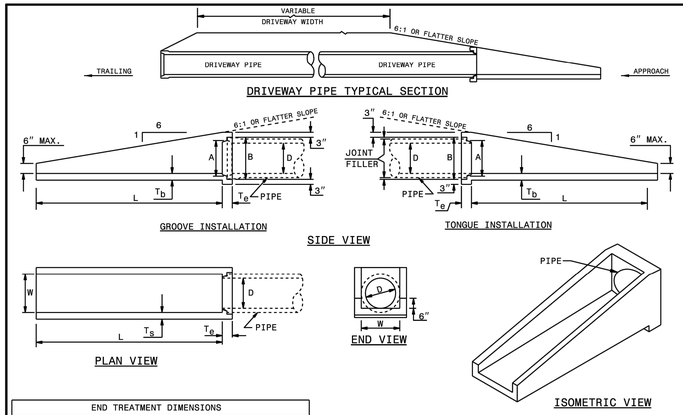
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 2
300.01



END TREATMENT DIMENSIONS							
D	L	W	T_S	T_D	T_e	A	B
15"	7'-6"	19"	4"	4"	6"	17¾"	20⅞"
18"	9'-0"	23"	4"	4"	6"	21¼"	25"
24"	12'-6"	30"	4"	4"	6"	27⅞"	32"

NOTES:
1. CONSTRUCT PIPE END SECTION USING #4 REBAR SPACED 9" EACH WAY AND MEET ALL REQUIREMENTS OF STD. SPEC. 310.
2. CHAMFER ALL EXPOSED CORNERS ¾".

STATE OF NORTH CAROLINA
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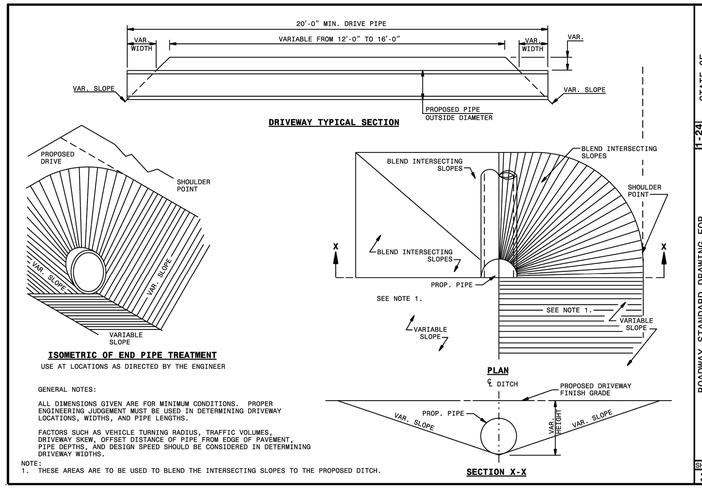
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
PARALLEL PIPE END SECTION
PRECAST CONCRETE SECTION FOR 15" TO 24" PIPE

SHEET 1 OF 1
310.02



GENERAL NOTES:

ALL DIMENSIONS GIVEN ARE FOR MINIMUM CONDITIONS. PROPER ENGINEERING JUDGEMENT MUST BE USED IN DETERMINING DRIVEWAY LOCATIONS, WIDTHS, AND PIPE LENGTHS.

FACTORS SUCH AS VEHICLE TURNING RADIUS, TRAFFIC VOLUMES, DRIVEWAY SKEW, OFFSET DISTANCE OF PIPE FROM EDGE OF PAVEMENT, PIPE DEPTHS, AND DESIGN SPEED SHOULD BE CONSIDERED IN DETERMINING DRIVEWAY WIDTHS.

NOTE:
1. THESE AREAS ARE TO BE USED TO BLEND THE INTERSECTING SLOPES TO THE PROPOSED DITCH.

STATE OF NORTH CAROLINA
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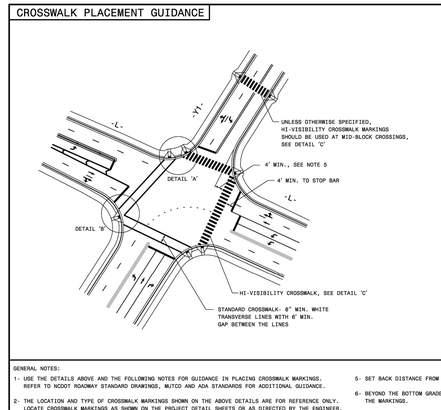
RALEIGH, N.C.

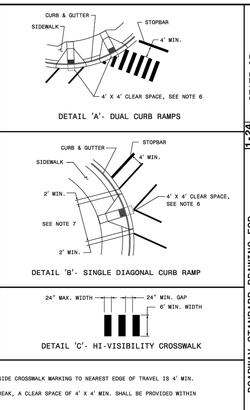
1-24

ROADWAY STANDARD DRAWING FOR
DRIVEWAY PIPE CONSTRUCTION
USING NO SPECIAL END SECTIONS

SHEET 1 OF 1
310.10

CROSSWALK PLACEMENT GUIDANCE





GENERAL NOTES:

1- USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUIDANCE IN PLACING CROSSWALK MARKINGS. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.

2- THE LOCATION AND TYPE OF CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. LOCATE CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER. THE CROSSWALK MARKING TYPE, STANDARD OR HI-VISIBILITY, SHALL BE INSTALLED AS SPECIFIED ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER.

3- THE STANDARD CROSSWALK IS TWO WHITE 8" WIN. TRANSVERSE LINES WITH A 6' WIN. GAP BETWEEN THE LINES. THE HI-VISIBILITY CROSSWALK IS WHITE 24" MAX. WIDE LONGITUDINAL LINES WITH 24" WIN. GAPS BETWEEN LINES, SEE DETAIL 'C'. HI-VISIBILITY CROSSWALKS SHOULD BE A MINIMUM OF 6' WIDE. CURB RAMPS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARES.

4- STOP BARS SHOULD BE PLACED A 4' WIN. IN ADVANCE OF NEAREST CROSSWALK LINE.

5- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.

6- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4' X 4' MIN. SHALL BE PROVIDED WITHIN THE MARKINGS.

7- SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2' MIN. LONG LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING, SEE DETAIL 'B'.

8- CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR DETAILS OR A SPECIAL DESIGN.

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1-24

ROADWAY STANDARD DRAWING FOR
PAVEMENT MARKINGS
PEDESTRIAN CROSSWALKS

SHEET 1 OF 2
1205.07

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CONSTRUCTION INFRASTRUCTURE DRAWINGS
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
LAWRENCE COOK

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

NCDOT DETAILS

C10.06

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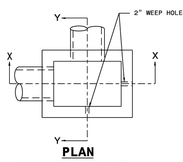


PLAN

WITH GRATE & FRAME REMOVED

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

MAX.DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12'-0". STD. DWG. 840.45 OR 840.46 CONTROLS MAXIMUM DEPTH IF PRECAST BOX IS USED.

CONSTRUCT WITH PIPE CROWNS MATCHING.

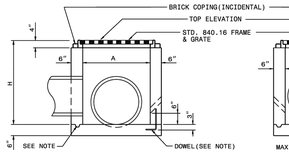
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

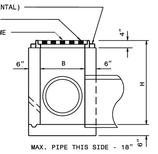
INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.



SECTION X-X



SECTION Y-Y

DOWEL

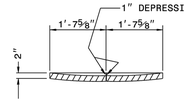
DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)								
DIMENSIONS OF BOX & PIPE				CUBIC YARDS CONC. IN BOX			DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT	BOTTOM SLAB	WALL PER FT. HT.	(TOTAL CONCRETE FOR BOTTOM SLAB & 1 FT. WALL)	C.W.	R.C.
D	A	B	H					
12"	3'-0"	2'-0"	2'-0"	0.222	0.222	0.592	0.015	0.026
15"	/	/	2'-3"		/	0.648	0.023	0.036
18"	/	/	2'-6"	/	/	0.703	0.033	0.049
24"	/	/	3'-0"	/	/	0.814	0.059	0.085
30"	3'-0"	2'-0"	3'-6"	0.222	0.222	0.925	0.092	0.127

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

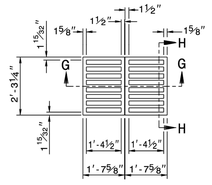
1-24

ROADWAY STANDARD DRAWING FOR
CONCRETE DROP INLET
12" THRU 30" PIPE

SHEET 1 OF 1
840.14

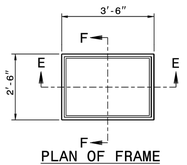


SECTION G-G



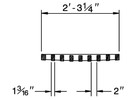
PLAN OF GRATING

CAST IRON

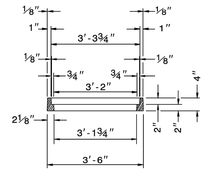


PLAN OF FRAME

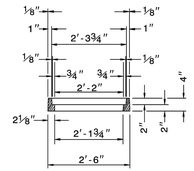
CAST IRON



SECTION H-H



SECTION E-E



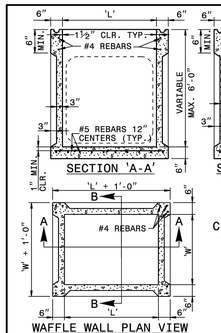
SECTION F-F

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
DROP INLET FRAME AND GRATES
FOR USE WITH STD. DWG.S 840.14 AND 840.15

SHEET 1 OF 1
840.16

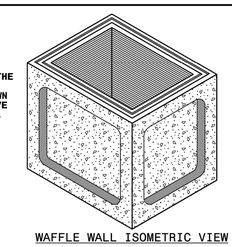


SECTION 'A-A' **SECTION 'B-B'**

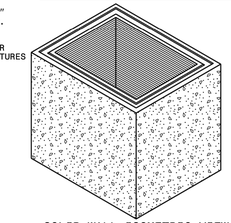
WAFFLE WALL PLAN VIEW **SOLID WALL PLAN VIEW**

SECTION 'C-C' **SECTION 'D-D'**

THE PATTERN OF THE KNOCK-OUT PANELS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.



WAFFLE WALL ISOMETRIC VIEW



SOLID WALL ISOMETRIC VIEW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

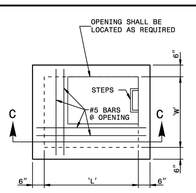
1-24

ROADWAY STANDARD DRAWING FOR
PRECAST DRAINAGE STRUCTURE
(SOLID AND WAFFLE WALL)

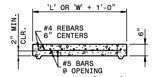
SHEET 1 OF 2
840.45

GENERAL NOTES:

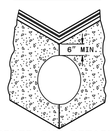
* THIS PRECAST BOX MAY BE USED FOR THE FOLLOWING STANDARDS: 840.01, 840.02, 840.04, 840.05, 840.13, 840.14, 840.15, 840.17, 840.18, 840.19, 840.26, 840.27, 840.28, 840.31, 840.32 AND 840.41.
* INSTALL PRECAST DRAINAGE STRUCTURES AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 840.
* DO NOT PLACE PRECAST DRAINAGE STRUCTURES UNDER TRAFFIC OR WHERE TRAFFIC WILL BE DETOURED.
* USE 4000 PSI CONCRETE.
* PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A1064.
* LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB FOR WAFFLE WALL STRUCTURE TO 10'-0"; LIMIT SOLID WALL STRUCTURE TO 15'-0".
* PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
* CUT OR FORM OPENINGS FOR PIPE TO PROVIDE REQUIRED SIZE AND LOCATION. ORIENT WAFFLE WALL STRUCTURES SO THAT PIPES ENTER THROUGH THE KNOCKOUT/WAFFLE PANELS ONLY. PIPES MAY ENTER THROUGH THE CORNERS OF SOLID WALL BOXES IF A MINIMUM OF 6" OF WALL IS PROVIDED ABOVE THE HOLE.
* ALL ELEMENTS PRECAST TO MEET ASTM C913.
* FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH CONCRETE OR BRICK IN ACCORDANCE WITH STANDARD 840.25.
* PROVIDE PRECAST STRUCTURES OVER 3'-6" IN DEPTH WITH STEPS AS DIRECTED BY THE ENGINEER.
* WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
* SEAL JOINTS WITH A FLEXIBLE BUTYL RUBBER BASE CONFORMING TO FEDERAL SPECIFICATION SS-S-21A, AASHTO M-198, TYPE B - BUTYL RUBBER.
* LIMIT MAXIMUM STRUCTURE SIZE TO INSIDE CLEAR DIMENSIONS OF 5'-0" X 5'-0".
* THE OUTSIDE PIPE DIAMETER PLUS 2" OR THE OPENING REQUIRED FOR FRAME AND GRATE IS THE MINIMUM STRUCTURE SIZE WHICHEVER IS GREATER.
* USE MANHOLE FRAME AND COVER AS INDICATED ON THE PLANS. REINFORCE OPENING AS SHOWN ON THIS SHEET.



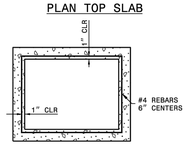
PLAN TOP SLAB



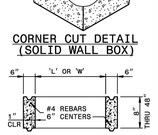
SECTION 'C-C'



CORNER CUT DETAIL (SOLID WALL BOX)



PRECAST RISER PLAN



PRECAST RISER DETAIL

SECTION VIEW

SECTION VIEW

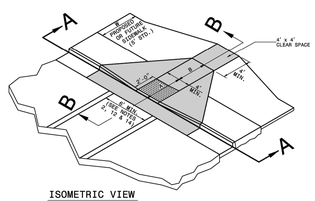
OPTIONAL JOINT DETAILS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

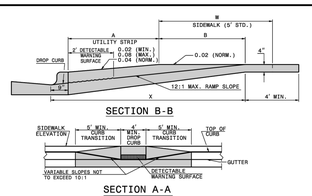
1-24

ROADWAY STANDARD DRAWING FOR
PRECAST DRAINAGE STRUCTURE
(GENERAL NOTES AND DETAILS)

SHEET 2 OF 2
840.45



ISOMETRIC VIEW



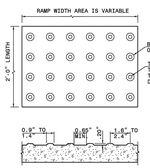
SECTION B-B

SECTION A-A

PAY LIMITS FOR CURB RAMP

NOTES:
DETECTABLE WARNING SURFACE SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.

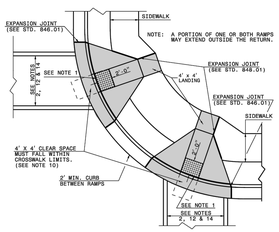
DETECTABLE WARNING SURFACE SHALL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING SURFACE

W	A	W+A+9"	X	B
5'	5.0'	8.8'	5.8'	5.0'*
6'	5.0'	8.8'	6.8'	6.0'**
7'	5.0'	7.8'	7.3'	6.5'**
8'	5.0'	8.8'	7.3'	6.5'**
5'	3.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



PLAN VIEW

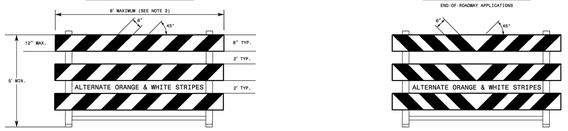
DUAL RAMPS
ANY RADII
(4' MIN. FLOOR WIDTH)

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 1 OF 13
848.06



GENERAL NOTES

1- HORIZONTAL RAILS FOR BARRICADES MAY BE CONSTRUCTED OF APPROVED COMPOSITE, HOLLOW/ CORRUGATED EXTRUDED RIGID POLYOLEFIN, HIGH DENSITY POLYETHYLENE, OR OTHER NCDOT APPROVED MATERIAL.

2- BARRICADE SHALL BE LIMITED TO A MAXIMUM LENGTH OF 8 FT UNLESS NCDOT APPROVED.

3- ONLY NCDOT APPROVED COMPOSITE AND ROLL-UP SIGNS MAY BE MOUNTED ON THE BARRICADE RAILS. MOUNT SIGNS TO BARRICADE RAILS TO ENSURE SIGN WILL NOT BECOME DETACHED UNDER NORMAL WIND AND TRAFFIC CONDITIONS.

4- SIGNS SHALL BE MOUNTED A MINIMUM OF 1 FOOT FROM THE GROUND TO THE BOTTOM OF THE SIGN UNLESS SIGN R11-3 IS REQUIRED BY THE PLANS OR DIRECTED BY THE ENGINEER.

5- ASSEMBLY OF THE GENERIC BARRICADES MUST BE SELF CERTIFIED BY THE ASSEMBLER.

6- BARRICADES USED TO CLOSE A ROADWAY SHALL EXTEND ACROSS THE ENTIRE ROADWAY. WHERE LOCAL TRAFFIC MUST BE MAINTAINED, THEY MAY BE PLACED IN A STAGGERED PATTERN.

7- STRIPES ON WORK ZONE BARRICADE RAILS SHALL BE ALTERNATE ORANGE AND WHITE RETROREFLECTIVE STRIPES, SLOPED DOWNWARD TOWARDS THE SIDE WHICH TRAFFIC IS TO PASS OR TURN IN DETOURING. WHERE NO TURNS ARE INTENDED, THE STRIPES SHOULD SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.

8- USE RED AND WHITE STRIPES FOR PERMANENT BARRICADES.

9- ALL BARRICADES MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.

10- PLACE SANDBAGS OR OTHER APPROVED BALLASTING METHODS ON THE FEET OF THE FRAME. DO NOT PLACE SANDBAGS ON TOP OF A STRIPED RAIL OR STABILIZER BAR. DO NOT BALLAST BARRICADES BY HEAVY OBJECTS SUCH AS ROCKS, CHUNKS OF CONCRETE OR OTHER ITEMS THAT WOULD CAUSE DAMAGE IF THE BARRICADE IS STRUCK BY A VEHICLE.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
BARRICADES
TYPE-III

SHEET 1 OF 1
1145.01

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1225 CRESCENT GREEN DRIVE, SUITE 250
CARY, NC 27518

CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06
ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
TERRENCE COOK

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

NCDOT DETAILS

C10.07

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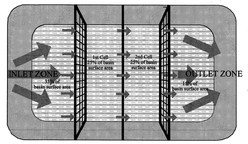
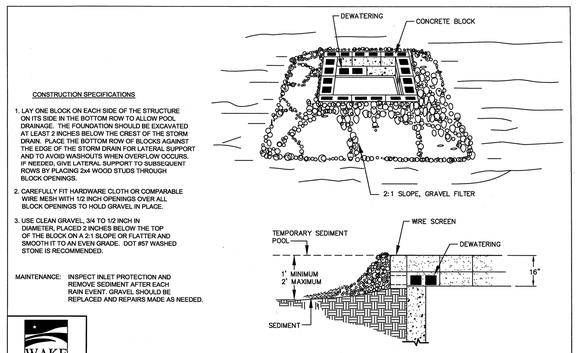


NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
2. MUCK OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY; WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
4. BAFFLE SHALL BE 700-G/M2 COIR EROSION BLANKET.
5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS
6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD BAFFLES DETAIL



CONSTRUCTION SPECIFICATIONS

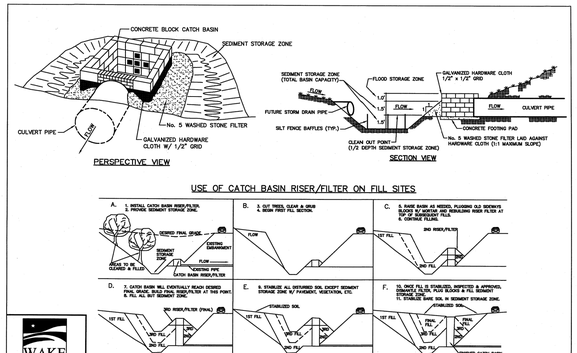
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCHES BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2 INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL, 3/4 TO 1/2 INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. DOT #57 WASHED STONE IS RECOMMENDED.

MAINTENANCE: INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

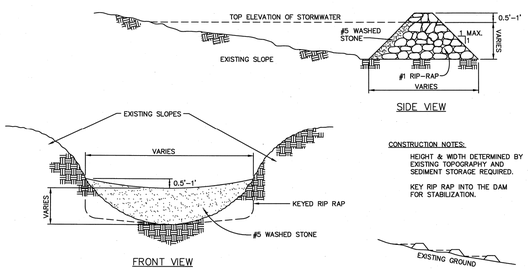
STANDARD BLOCK & GRAVEL DROP INLET PROTECTION



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD CATCH BASIN RISER/FILTER



CONSTRUCTION NOTES:

HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.

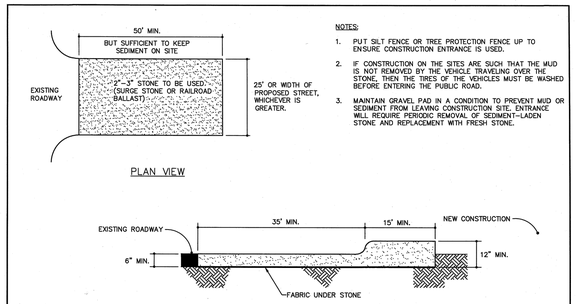
KEY RIP RAP INTO THE DAM FOR STABILIZATION.

NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD CHECK DAM

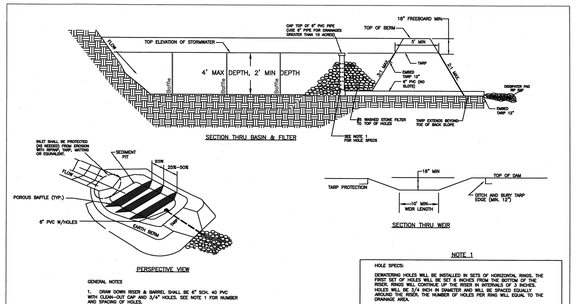


NOTES:
1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.
3. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING CONSTRUCTION SITE. ENTRANCE WILL REQUIRE PERIODIC REMOVAL OF SEDIMENT-LADEN STONE AND REPLACEMENT WITH FRESH STONE.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD CONSTRUCTION ENTRANCE



GENERAL NOTES
1. DRAIN DOWN RISER & BARREL SHALL BE 6" SCH. 40 PVC WITH CLEAN-OUT CAP AND 3/4" HOLES. SEE NOTE 1 FOR NUMBER AND SPACING OF HOLES.
2. THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO THE DIMENSIONS OF THE WEIR. THE TARP SHOULD BE 10' OR LESS. THE TARP SHALL BE OVERLAPPED AT LEAST 18" ON THE SIDES AND 18" ON THE TARP SHALL OVERLAP THE CONSTRUCTION TARP. THE TARP SHALL BE 40 MIL. HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT FOR CONSTRUCTION.
3. MAINTENANCE: SEDIMENT TO BE REMOVED AND PROPERLY DISPOSED OF WHEN BERM IS HALF FULL. GRAVEL FILTER AROUND RISER SHOULD BE REPLACED AS NEEDED TO ENSURE DEWATERING.

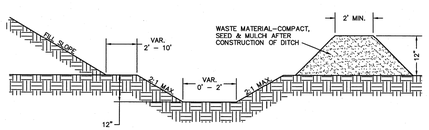
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD CUSTOM BASIN

NOTES:

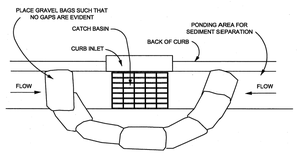
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.



WAKE COUNTY NORTH CAROLINA

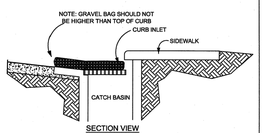
EFFECTIVE: 01/31/08

STANDARD TEMPORARY DIVERSION DITCH



NOTES:

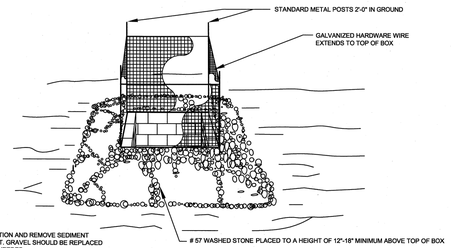
1. PLACE GRAVEL BAG BARRIER ON GENTLY SLOPING STREET, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNNOFF.
2. USE SAND BAGS OF WOVEN GEOTEXTILE FABRIC (NOT BURLAP) AND FILL WITH $\frac{1}{2}$ INCH (OR SMALLER) GRAVEL. BAGS MUST BE LAYERED SUCH THAT NO GAPS ARE EVIDENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.
4. WHEN INSTALLING CURB INLET PROTECTION DEVICES, NEVER BLOCK THE CURB INLET.



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD GRAVEL BAG CURB INLET PROTECTION



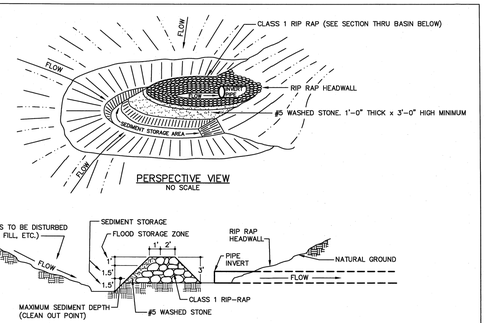
NOTE:

1. INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

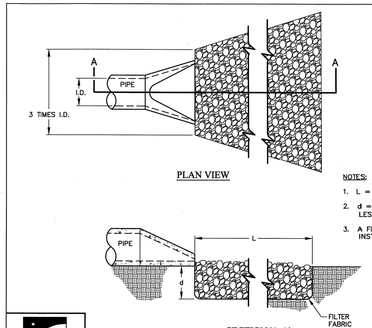
STANDARD GRAVEL YARD INLET PROTECTION



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD HORSESHOE INLET PROTECTION



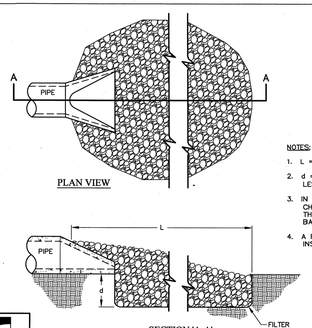
NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL



NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL

EROSION AND SEDIMENT CONTROL

APPROVED PLAN

DATE_____

PERMIT NO. S-_____

Wake County Environmental Services
Sedimentation & Erosion Control
919-856-7400

ENVIRONMENTAL CONSULTANT SIGNATURE

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167 E. Chatham St. | Suite 210 | Cary, NC 27511
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — LAWRENCE COOK
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

EROSION CONTROL DETAILS

C10.08

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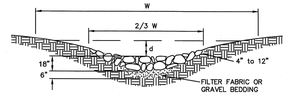
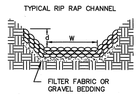


PARABOLIC–SHAPED WATERWAY WITH STONE CENTER DRAIN
(SHAPED BY BULLDOZER)



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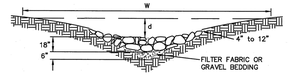


V–SHAPED WATERWAY WITH STONE CENTER DRAIN
(SHAPED BY MOTOR GRADER)

NOTES:

–TO BE USED WHERE EXCESSIVE STORMWATER VELOCITIES PROHIBIT VEGETATIVE LININGS.

–SIZE OF STONE MUST BE DETERMINED BY APPROPRIATE DESIGN PROCEDURE.

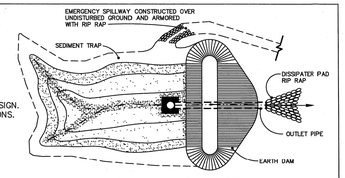
–DIMENSIONS FOR d & W VARIES ACCORDING TO DESIGN.

WAKE COUNTY NORTH CAROLINA

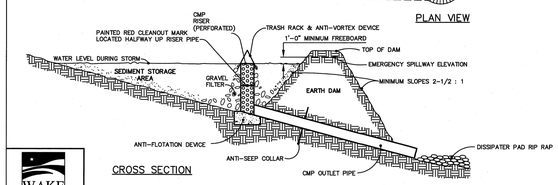
EFFECTIVE: 01/31/08

STANDARD RIP-RAP LINED CHANNELS

NOTES:
1. PROVIDE ALL CALCULATIONS FOR ORIFICE DESIGN.
2. PROVIDE ANTI–FLOTATION BLOCK CALCULATIONS.



PLAN VIEW

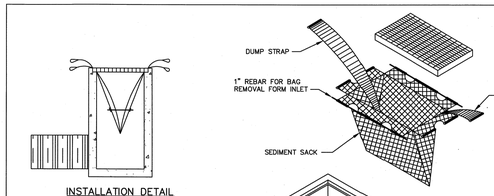


CROSS SECTION

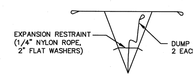
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

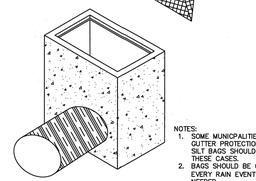
STANDARD RISER-BARREL SEDIMENT BASIN



INSTALLATION DETAIL



BAG DETAIL

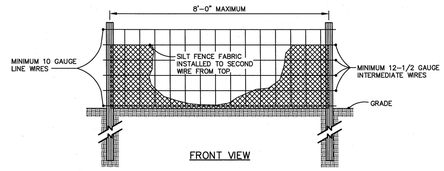


NOTES:
1. SOME MUNICIPALITIES DO NOT ALLOW GUTTER PROTECTION ON PUBLIC ROADS. SILT BAGS SHOULD BE USED WITH THESE CASES.
2. BAGS SHOULD BE CLEANED OUT AFTER EVERY RAIN EVENT AND/OR AS NEEDED.

WAKE COUNTY NORTH CAROLINA

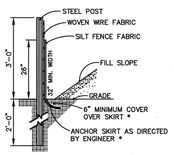
EFFECTIVE: 01/31/08

STANDARD SILT BAG - INLET SEDIMENT CONTROL DEVICE



FRONT VIEW

NOTE:
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE.

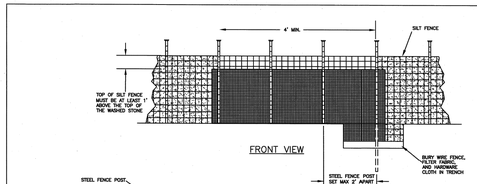


SIDE VIEW

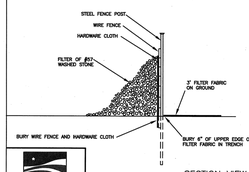
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD TEMPORARY SILT FENCE



FRONT VIEW



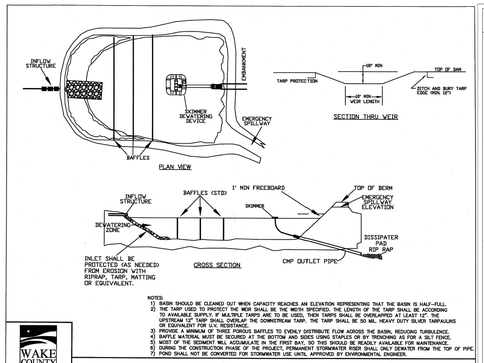
SECTION VIEW

NOTES:
1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.
2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SILT FENCE OUTLET



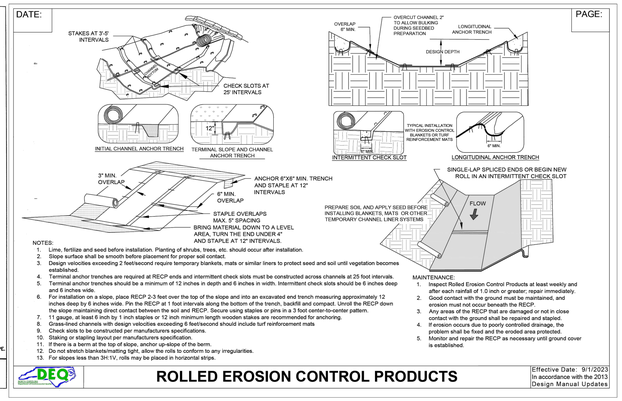
NOTES:
1) BASIN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF–FULL.
2) THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM TARP SHALL BE PLACED ON TOP OF THE DOWNSTREAM TARP. THE TARP SHALL BE 50 ML HEAVY DUTY SILNER TARPAULINS OR EQUIVALENT FOR UV RESISTANCE.
3) PROVIDE A MINIMUM OF THREE POROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) DURING THE CONSTRUCTION PHASE OF THE PROJECT, PERMANENT STORMWATER RISER SHALL ONLY DEWATER FROM THE TOP OF PIPE.
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNTIL APPROVED BY ENVIRONMENTAL ENGINEER.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER BASIN

DATE: PAGE:



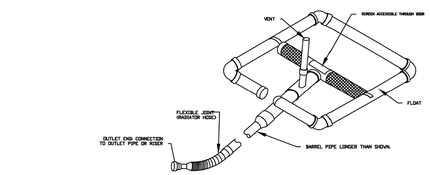
NOTES:
1. Lime, fertilize and seed before installation. Planting of shrubs, trees, etc. should occur after installation.
2. Slope surface shall be smooth before placement for proper soil contact.
3. Design velocities exceeding 2 feet/second require temporary blankets, mats or similar liners to protect seed and soil until vegetation becomes established.
4. Terminal anchor trenches are required at RECP ends and intermittent check slots must be constructed across channels at 25 foot intervals.
5. Terminal anchor trenches should be a minimum of 12 inches in depth and 6 inches in width. Intermittent check slots should be 6 inches deep and 6 inches wide.
6. For installation on a slope, place RECP 2-3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Pin the RECP at 1 foot intervals along the bottom of the trench, backfill and compact. Unroll the RECP down the slope maintaining direct contact between the soil and RECP. Secure using staples or pins in a 3 foot center-to-center pattern.
7. 11 gauge, at least 6 inch by 1 inch staples or 12 inch minimum length wooden stakes are recommended for anchoring.
8. Grass-lined channels with design velocities exceeding 6 feet/second should include turf reinforcement mats
9. Check slots to be constructed per manufacturers specifications.
10. Staking or stapling layout per manufacturers specification.
11. If there is a berm at the top of slope, anchor up-slope of the berm.
12. Do not stretch blankets/matting tight, allow the rolls to conform to any irregularities.
13. For slopes less than 3H:1V, rolls may be placed in horizontal strips.

MAINTENANCE:
1. Inspect Rolled Erosion Control Products at least weekly and after each rainfall of 1.0 inch or greater; repair immediately.
2. Good contact with the ground must be maintained, and erosion must not occur beneath the RECP.
3. Any areas of the RECP that are damaged or not in close contact with the ground shall be repaired and stapled.
4. If erosion occurs due to poorly controlled drainage, the problem shall be fixed and the eroded area protected.
5. Monitor and repair the RECP as necessary until ground cover is established.

DEQ

ROLLED EROSION CONTROL PRODUCTS

Effective Date: 8/1/2023
In accordance with the 2013 Design Manual Updates



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

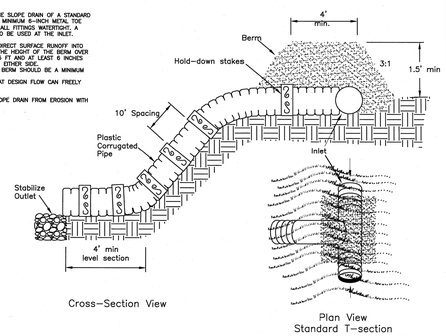
STANDARD SKIMMER DETAIL

NOTES:

1. CONSTRUCT THE ENTRANCE TO THE SLOPE DRAIN OF A STANDARD FLARED–END SECTION OF PIPE WITH A MINIMUM 6–INCH METAL TOE PLATE (CROSS–SECTION VIEW). MAKE ALL FITTINGS WATERTIGHT. A STANDARD T–SECTION FITTING MAY ALSO BE USED AT THE INLET.

2. USE AN EARTHEN DIVERSION TO DIRECT SURFACE RUNOFF INTO THE TEMPORARY SLOPE DRAIN. MAKE THE HEIGHT OF THE BERM OVER THE DRAIN CONDUIT A MINIMUM OF 1.5 FT AND AT LEAST 6 INCHES HIGHER THAN THE ADJOINING BERM ON EITHER SIDE. THE LOWEST POINT OF THE DIVERSION BERM SHOULD BE A MINIMUM OF 1 FT ABOVE THE TOP OF THE DRAIN SO THAT DESIGN FLOW CAN FREELY ENTER THE PIPE.

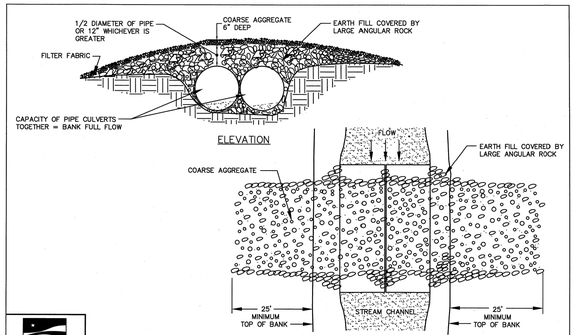
3. PROTECT THE OUTLET OF THE SLOPE DRAIN FROM EROSION WITH RIPRAP DISSIPATOR.



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

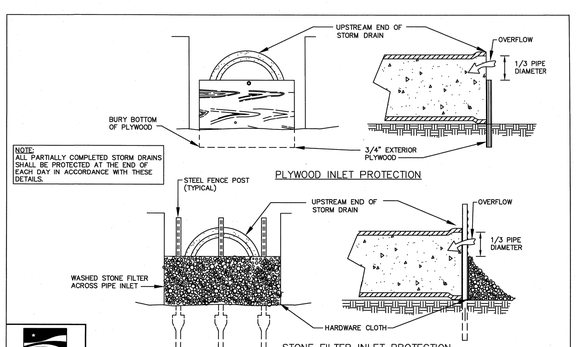
STANDARD TEMPORARY SLOPE DRAIN



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD TEMPORARY STREAM CROSSING



NOTE:
ALL PARTIALLY COMPLETED STORM DRAINS SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DETAILS.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE)

PERMANENT SEEDING - SHOULDERS, SIDE DITCHES, SLOPES (MAX. 3:1)

DATE	TYPE	PLANTING RATE
AUG. 15 - NOV. 1	TALL FESCUE	200 LBS./ACRE
NOV. 1 - MAR.1	TALL FESCUE AND ABRUZZI RYE *(NURSE CROP)	200 LBS./ACRE 25 LBS./ACRE
MAR. 1 - APR. 15	TALL FESCUE	200 LBS./ACRE
APR. 15 - JUN. 30	HULLED COMMON BERMUDAGRASS	15 LBS./ACRE

PERMANENT SEEDING - SLOPES (3:1 TO 2:1)

AUG. 15-NOV.1	TALL FESCUE AND SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED)	200 LBS/ACRE 60 TO 70 LBS/ACRE
NOV. 1-MAR.1	TALL FESCUE AND CERICEA LESPEDEZA (UNHULLED, UNSCARIFIED) AND ABRUZZI RYE	200 LBS/ACRE 60 TO 70 LBS/ACRE 25 LBS/ACRE
MAR. 1-JUNE 1	TALL FESCUE AND SERICEA LESPEDEZA (SCARIFIED)	200 LBS/ACRE 40 TO 50 LBS/ACRE
MAR. 15-JUNE 30	WEEPING LOVEGRASS AND SCRICEA LESPEDEZA (SCARIFIED)	10 LBS/ACRE 40 TO 50 LBS/ACRE
MAR. 15-JUNE 30	HULLED COMMON BERMUDAGRASS AND SERICEA LESPEDEZA (SCARIFIED)	15 LBS/ACRE 40 TO 50 LBS/ACRE

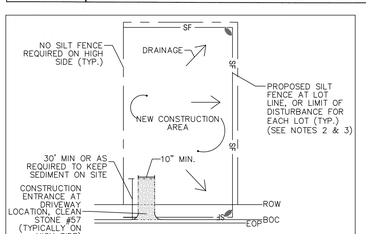
TEMPORARY SEEDING

JUNE 1-SEPT. 1	TALL FESCUE AND BROWN TOP MILLET *(NURSE CROP) OR SORGHUM-SUDAN HYBRIDS *(NURSE CROP)	200 LBS/ACRE 35 LBS/ACRE 30 LBS/ACRE

CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

*NURSE CROP/TEMPORARY - RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING, OTHERWISE FESCUE MAY BE SHADED OUT.

MULCH WITH WHEAT STRAW AT 2,000 LBS/AC.



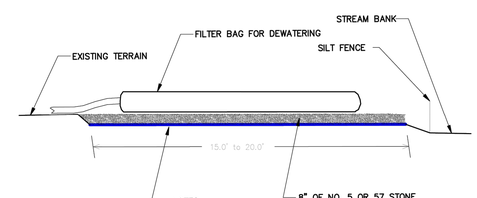
NOTES:
1. BEFORE INDIVIDUAL LOT CONSTRUCTION, BUILDER SHALL FOLLOW THIS TYPICAL DETAIL.

2. SILT FENCE WILL BE REQUIRED ON LOW SIDE OF ALL LOTS AND AS SHOWN ON THE EROSION CONTROL PLANS. SEE PLAN VIEW FOR ADDITIONAL NOTES AND ADDITIONAL EROSION CONTROL DEVICES.

3. SILT FENCE SHALL BE REQUIRED ALONG ALL ROAD FRONTAGE TO DIRECT CONSTRUCTION TRAFFIC TO GRAVEL ENTRANCE.

4. SILT FENCE OUTLETS SHALL BE ADDED TO EACH LOT'S LOW POINT, AND SHOULD BE ADJUSTED AS NEEDED BASED ON THE ACTUAL LOT DRAINAGE PATTERN AND TOPOGRAPHY.

TYPICAL EROSION CONTROL FOR INDIVIDUAL LOTS



NOTES
1. PROVIDE STABILIZED OUTLET TO STREAM BANK.
2. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.

MAINTENANCE NOTES

1. REPLACE AND DISPOSE OF FILTER BAG(S) WHEN IT IS ⅓ FULL OF SEDIMENT OR WHEN IT IS IMPRCTICAL FOR BAG TO FILTER SEDIMENT.
2. PROVIDE A SUFFICEINT QUANTITY OF FILTER BAGS TO CONTAIN SILT FROM PUMPED EFFLUENT.

NOT TO SCALE

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD FILTER BAG FOR DEWATERING ACTIVITIES

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — JOHN TERRENCE COOK
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DRN: WR DGN: WR CKD: WR

EROSION CONTROL DETAILS

C10.09

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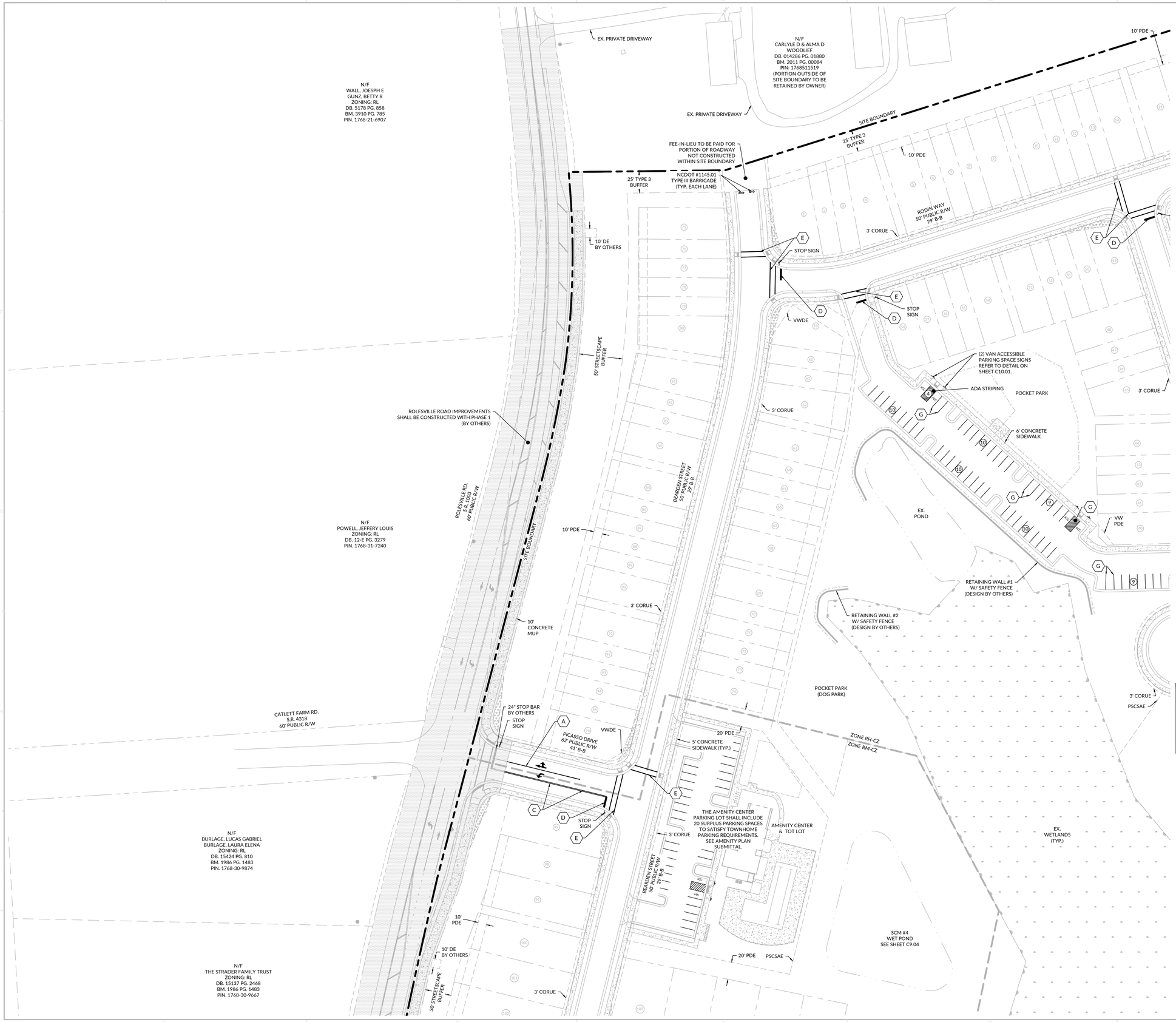

PAVEMENT MARKING LEGEND

- PAVEMENT MARKING SYMBOLS
- (A) 4" WHITE LANE LINE
- (C) 4" WIDE DOUBLE YELLOW SOLID LINE
- (D) 24" WHITE STOP BAR (MIN 4' BEHIND CROSSWALK)
- (E) 8" WHITE TRANSVERSE LINES
- (G) 4" WHITE PARKING SPACE LINE

STRIPING NOTES:

1. ALL MARKINGS AND SIGNAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH MUTCD STANDARDS, INCLUDING COLOR, LETTER HEIGHT, AND LETTER CASE OF THE STREET NAME SIGNS.
2. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
3. ANY EXISTING PAVEMENT STRIPING THAT IS IN CONFLICT WITH THE PROPOSED STRIPING SHOWN ON THIS PLAN SHALL BE REMOVED.

KEY MAP

NOT TO SCALE

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SUITE 250
CARY, NC 27518

CONSTRUCTION INFRASTRUCTURE DRAWINGS
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CID-24-06

ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
LAWRENCE COOK
PRELIMINARY
NOT APPROVED FOR
CONSTRUCTION

SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SIGNAGE & PAVEMENT MARKINGS PLAN

C11.01

PAVEMENT MARKING LEGEND

- PAVEMENT MARKING SYMBOLS
- (A) 4" WHITE LANE LINE
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- (D) 24" WHITE STOP BAR (MIN 4' BEHIND CROSSWALK)
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KEY MAP

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
TERRENCE COOK

SCALE: 1 inch = 50 ft.

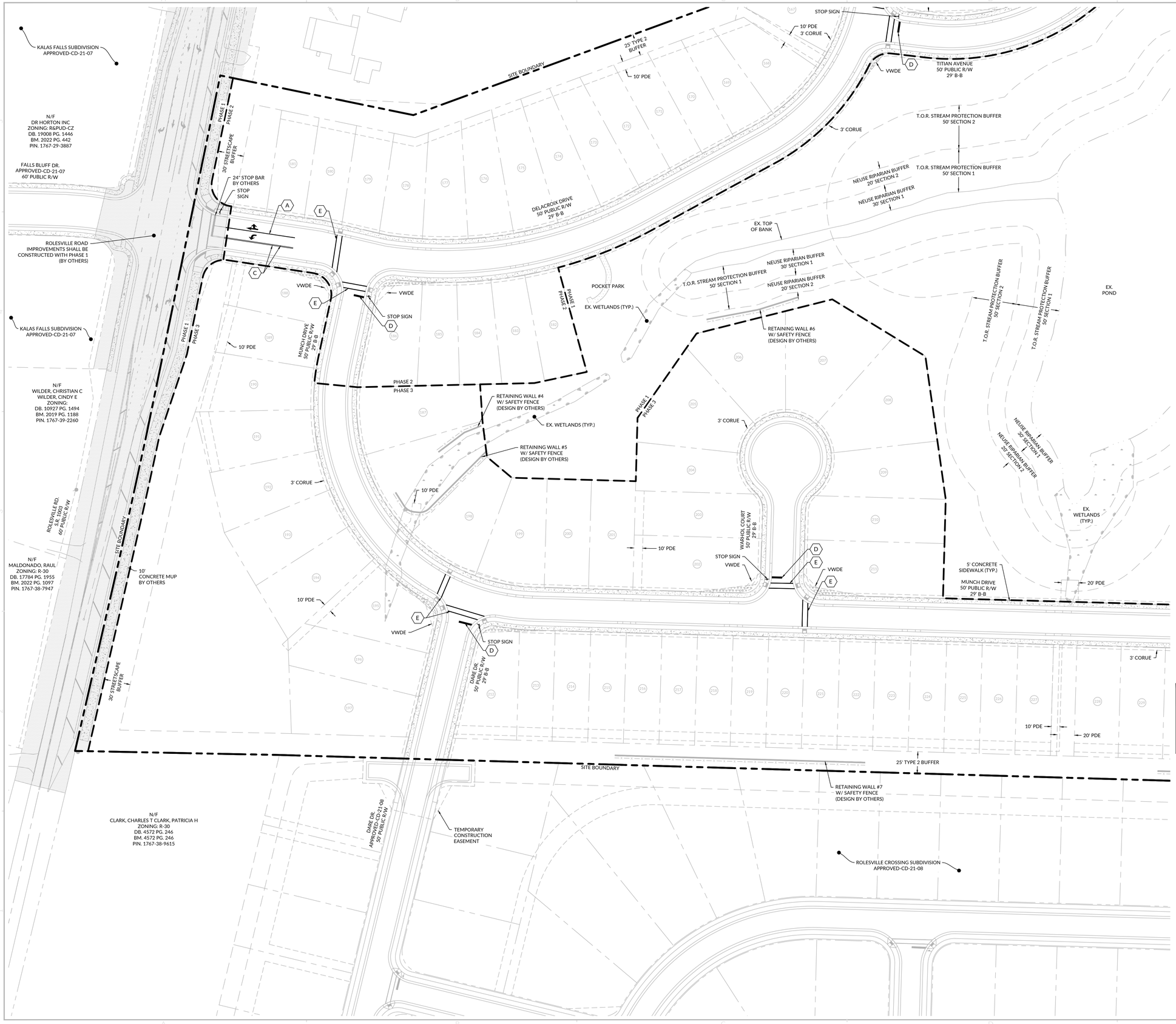
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

SIGNAGE & PAVEMENT MARKINGS PLAN

C11.02

J:\2\0045-pulte_woodlief_assemblage\CAD\drawing sets\construction\C11.01-11.07 SIGNAGE & PAVEMENT MARKINGS PLAN.dwg Thursday, February 27, 2025 5:43:10 PM - JMEITH



PAVEMENT MARKING LEGEND

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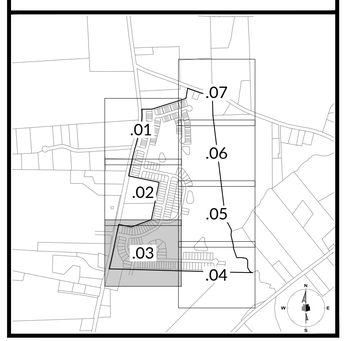
KEY MAP

NOT TO SCALE



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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036963 CLARENCE COPLEY JENKINS
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
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2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SIGNAGE & PAVEMENT MARKINGS PLAN

C11.03

EST 1993

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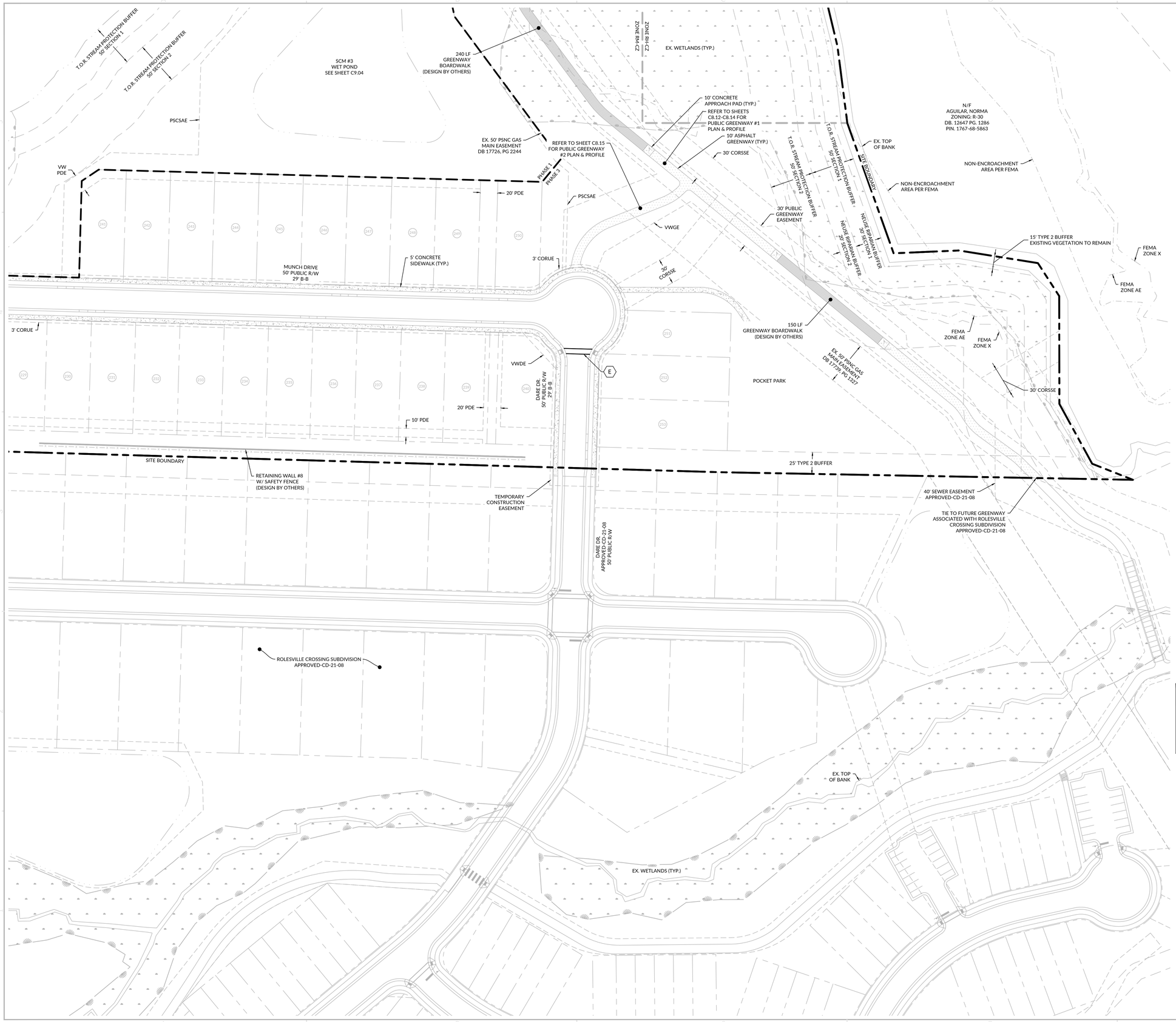

PAVEMENT MARKING LEGEND

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- (G) 4" WHITE PARKING SPACE LINE

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KEY MAP

NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL ENGINEER TERRENCE COOK
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
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REVISED PER REVIEW COMMENTS
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REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SIGNAGE & PAVEMENT MARKINGS PLAN

C11.04

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PAVEMENT MARKING LEGEND

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL JAMES TERRENCE COOK
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

SIGNAGE & PAVEMENT MARKINGS PLAN

C11.05

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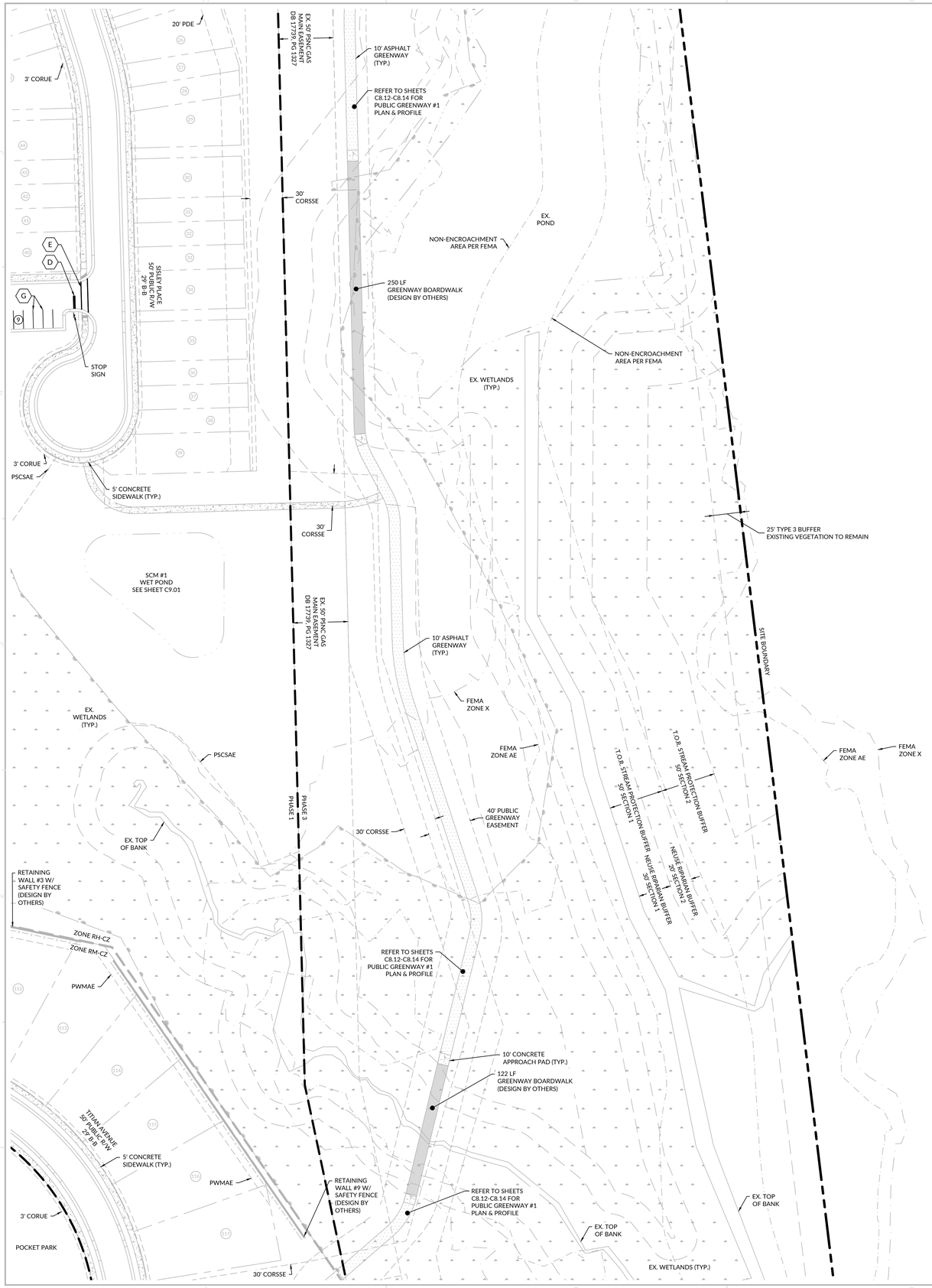

PAVEMENT MARKING LEGEND

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KEY MAP

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036963 JERRENCE COOK
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
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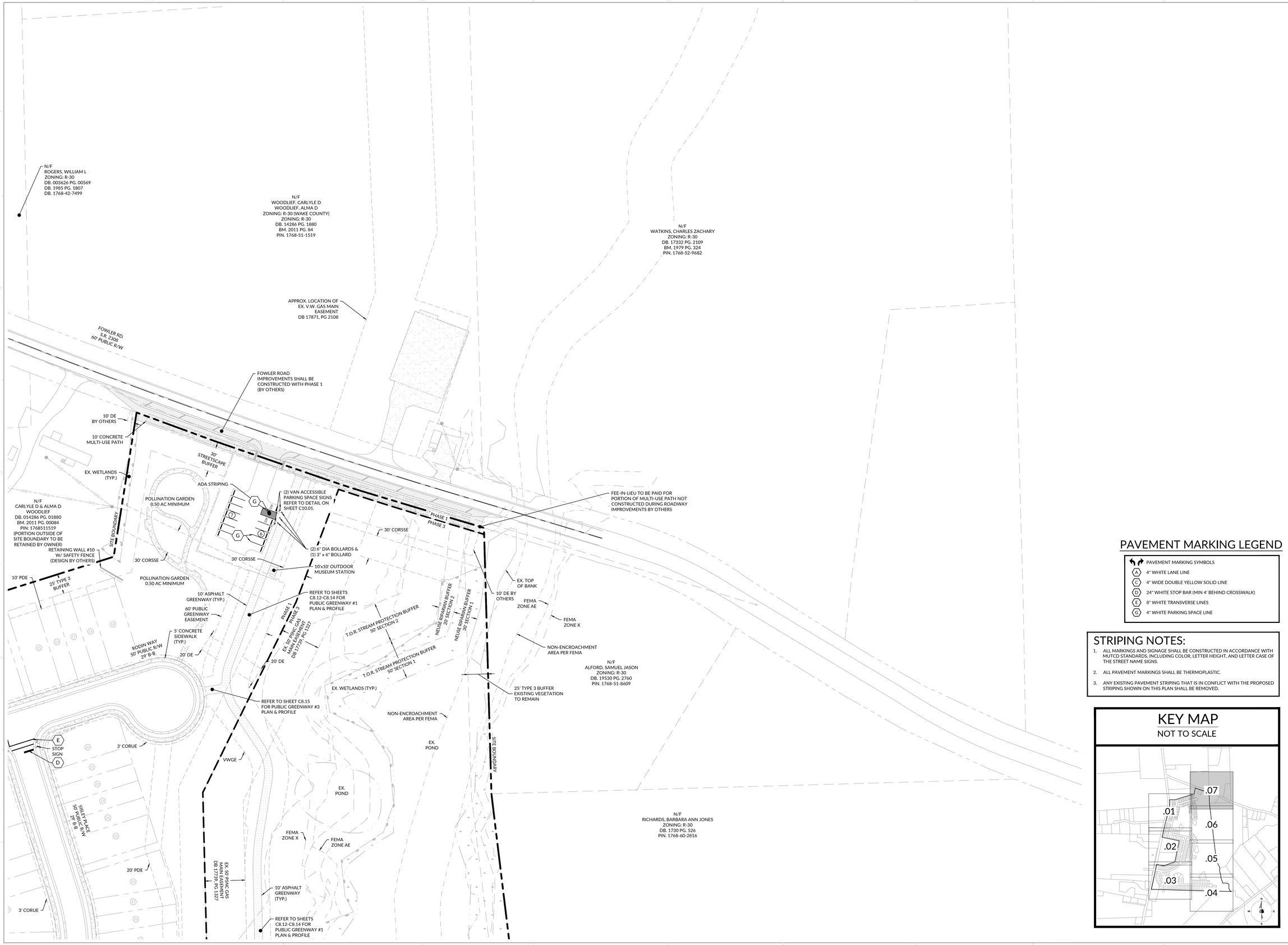
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR DGN: WR	CKD: WR

SIGNAGE & PAVEMENT MARKINGS PLAN

C11.06

J:\23\0045-pulte_wendlief_assemblage\CAD\drawing sets\construction\C11.01-11.07 SIGNAGE & PAVEMENT MARKINGS PLAN.dwg Thursday, February 27, 2025 5:43:24 PM - JMETH



PAVEMENT MARKING LEGEND

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KEY MAP

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
LAWRENCE COGAN
PRELIMINARY
NOT APPROVED FOR
CONSTRUCTION

0 25 50
SCALE: 1 inch = 50 ft.

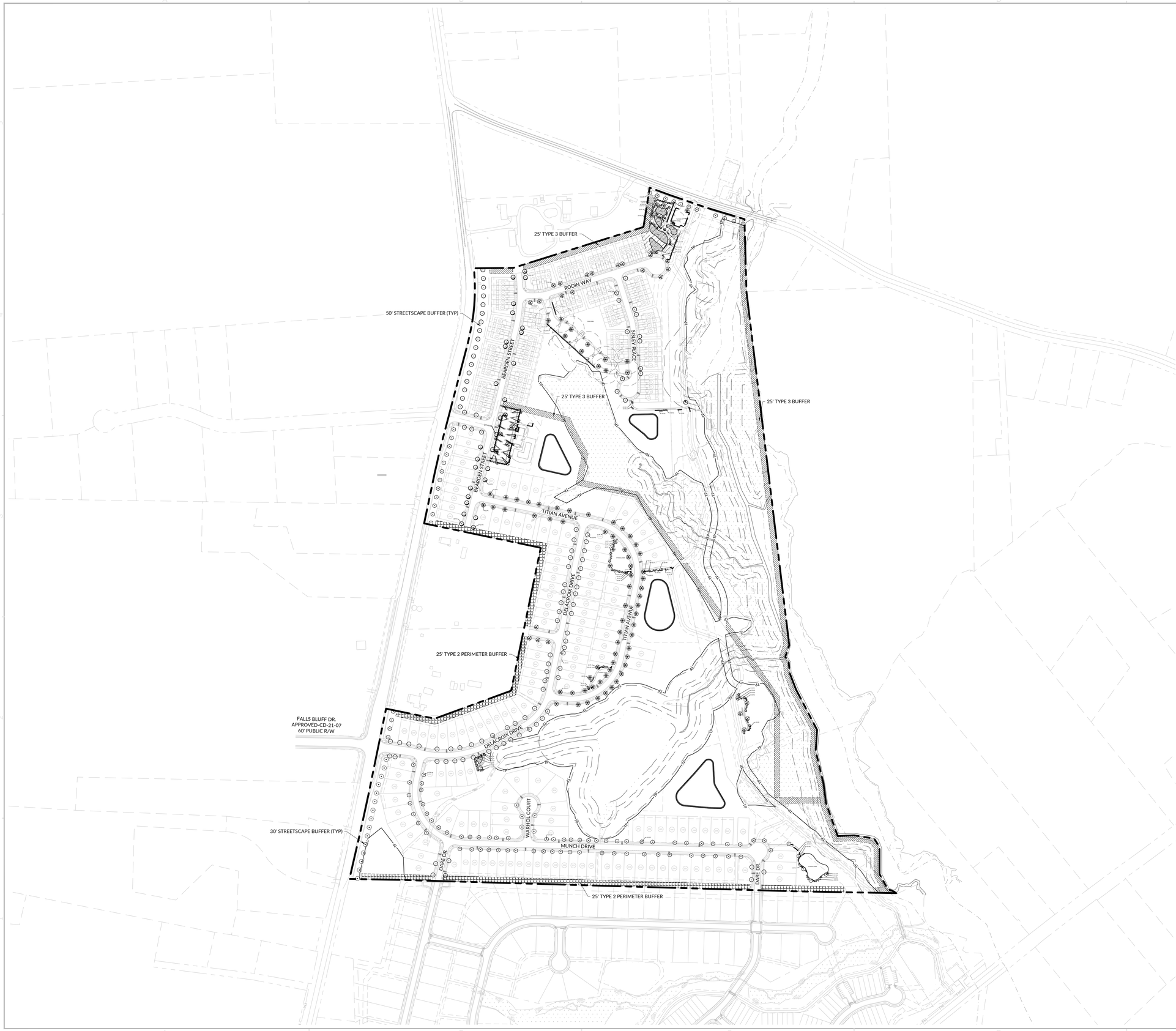
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR DGN: WR	CKD: WR

SIGNAGE & PAVEMENT MARKINGS PLAN

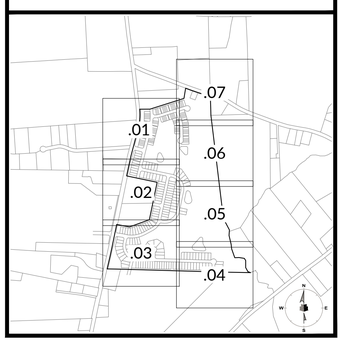
C11.07

J:\23\0045-pulte_woodlief_assemblage\CAD\drawing sets\construction\C11.01-11.07 SIGNAGE & PAVEMENT MARKINGS PLAN.dwg Thursday, February 27, 2025 5:43:27 PM JRETTH



KEY MAP

NOT TO SCALE



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CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06

ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA LANDSCAPE ARCHITECT
NIEL B. WHATLEY

PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 100 200
SCALE: 1 inch = 200 ft.

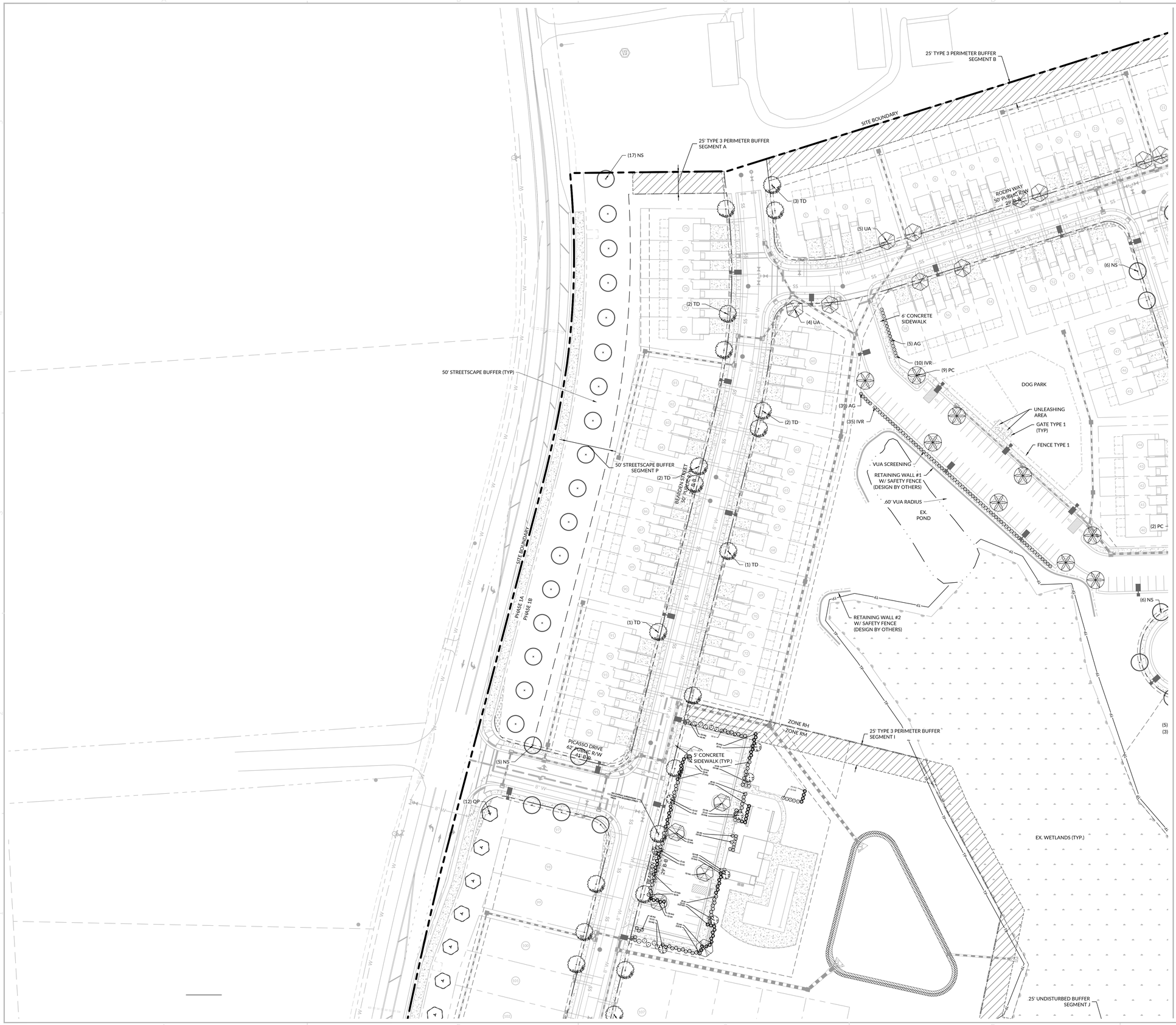
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

OVERALL LANDSCAPE PLAN

L1.00

I:\23\0045-public_wendell assemblage\CADd\drawing sets\construction\L1.00 OVERALL LANDSCAPE & LIGHTING PLAN.dwg - Thursday, February 27, 2025 1:57:16 PM - JKOTH



PLANT LEGEND

SYMBOL	CODE	BOTANICAL NAME
TREES		
	AR	Acer rubrum
	CC	Cercis canadensis
	CV	Chionanthus virginicus
	NS	Nyssa sylvatica
	PC	Pistacia chinensis
	PO	Platanus occidentalis
	QP	Quercus phellos
	TD	Taxodium distichum
	UA	Ulmus americana
SHRUBS		
	AG	Abelia x grandiflora
	HQ	Hydrangea quercifolia
	IC	Ilex cornuta 'Needlepoint'
	IG	Ilex glabra 'Shamrock'
	IVO	Ilex vomitoria
	IVR	Itea virginica
GROUND COVERS		
	POLL	Pollinator Mix

KEY MAP

NOT TO SCALE

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CONSTRUCTION INFRASTRUCTURE DRAWINGS

BROADMOOR
CID-24-06

ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA LANDSCAPE ARCHITECT NIEL B. WHITT

PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
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WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

LANDSCAPE PLAN

L1.01

J:\23\0045-pulte_wendfell assemblage\CAD\drawing set\construction\L1.01-1.07 LANDSCAPE & LIGHTING PLAN.dwg - Thursday, February 27, 2025 5:38:38 PM - JSECCCO

PLANT LEGEND

SYMBOL	CODE	BOTANICAL NAME
TREES		
	AR	Acer rubrum
	CC	Cercis canadensis
	CV	Chionanthus virginicus
	NS	Nyssa sylvatica
	PC	Pistacia chinensis
	PO	Platanus occidentalis
	QP	Quercus phellos
	TD	Taxodium distichum
	UA	Ulmus americana
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	IVR	Itea virginica
GROUND COVERS		
	POLL	Pollinator Mix

KEY MAP

NOT TO SCALE

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CONSTRUCTION INFRASTRUCTURE DRAWINGS
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CID-24-06

ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA LANDSCAPE ARCHITECT
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
DANIEL B. WHAN

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
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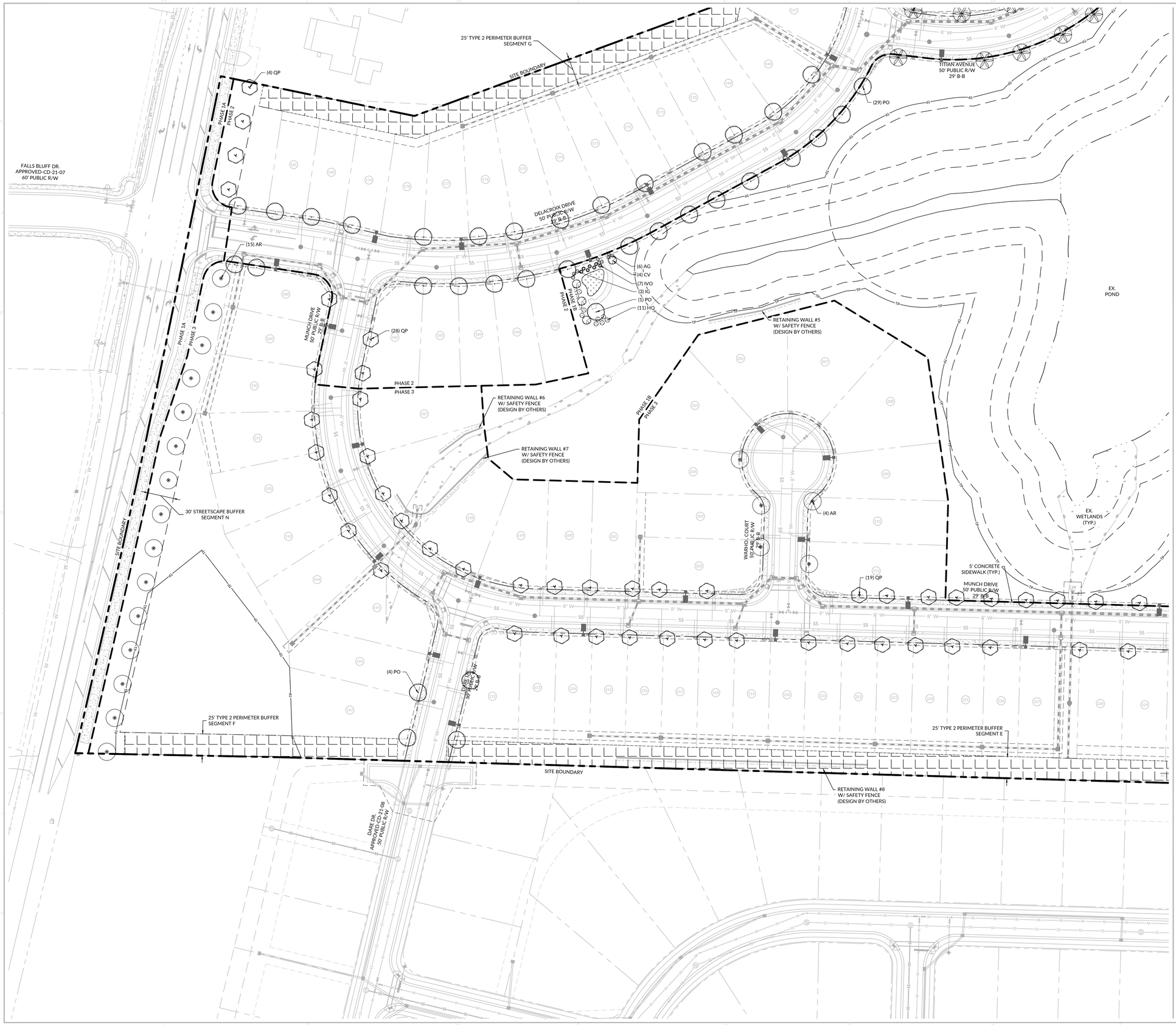
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR DGN: WR	CKD: WR

LANDSCAPE PLAN

L1.02

J:\2310045-pulte_woodlief_assemblage\CAD\drawing sets\construction\L1.01-L1.07 LANDSCAPE & LIGHTING PLAN.dwg - Thursday, February 27, 2025 5:58:43 PM - JDEICCIO



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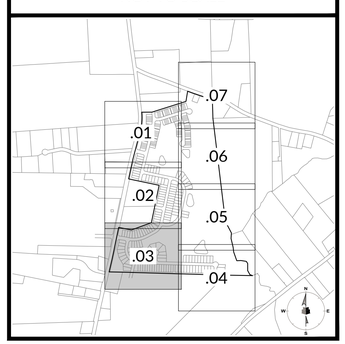
	IG	Ilex glabra 'Shamrock'
	IVO	Ilex vomitoria
	IVR	Itea virginica
GROUND COVERS		
	POLL	Pollinator Mix

KEY MAP

NOT TO SCALE



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CONSTRUCTION INFRASTRUCTURE DRAWINGS

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CID-24-06

ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA LANDSCAPE ARCHITECT
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
MICHAEL B. WHITLEY

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
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WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

LANDSCAPE PLAN

L1.03

EST. 1993

J:\23\0045-pulte_wendell-assemblage\CAD\drawing set\construction\L1.01-1.07 LANDSCAPE & LIGHTING PLAN.dwg - Thursday, February 27, 2025 5:58:55 PM - JDECICCO

PLANT LEGEND

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	AG	Abelia x grandiflora
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	IVO	Ilex vomitoria
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GROUND COVERS		
	POLL	Pollinator Mix

KEY MAP

NOT TO SCALE

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PULTEGROUP
1225 CRESCENT GREEN DRIVE, SUITE 250
CARY, NC 27518

CONSTRUCTION INFRASTRUCTURE DRAWINGS
BROADMOOR
CID-24-06

ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
ISRAEL B. WHATLEY

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

LANDSCAPE PLAN

L1.04

EST. 1993

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PLANT LEGEND

SYMBOL	CODE	BOTANICAL NAME
TREES		
	AR	Acer rubrum
	CC	Cercis canadensis
	CV	Chionanthus virginicus
	NS	Nyssa sylvatica
	PC	Pistacia chinensis
	PO	Platanus occidentalis
	QP	Quercus phellos
	TD	Taxodium distichum
	UA	Ulmus americana
SHRUBS		
	AG	Abelia x grandiflora
	HQ	Hydrangea quercifolia
	IC	Ilex cornuta 'Needlepoint'
	IG	Ilex glabra 'Shamrock'
	IVO	Ilex vomitoria
	IVR	Itea virginica
GROUND COVERS		
	POLL	Pollinator Mix

KEY MAP
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NORTH CAROLINA LANDSCAPE ARCHITECT
PRELIMINARY
NOT APPROVED FOR CONSTRUCTION
NEIL B. WHITE

0 25 50
SCALE: 1 inch = 50 ft.

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REVISED PER REVIEW COMMENTS

WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

LANDSCAPE PLAN

L1.05

EST. 1910

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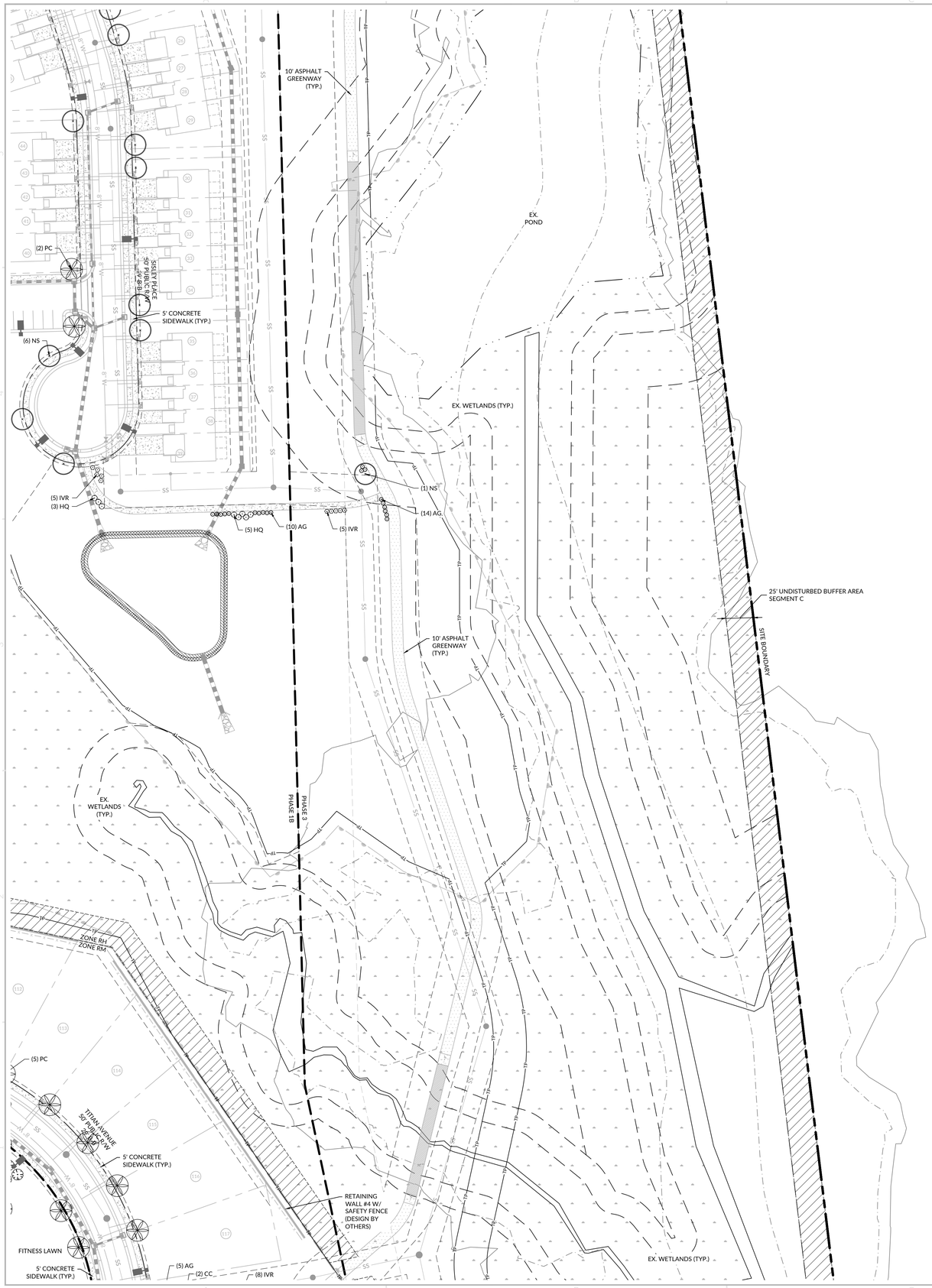

PLANT LEGEND

SYMBOL	CODE	BOTANICAL NAME
TREES		
	AR	Acer rubrum
	CC	Cercis canadensis
	CV	Chionanthus virginicus
	NS	Nyssa sylvatica
	PC	Pistacia chinensis
	PO	Platanus occidentalis
	QP	Quercus phellos
	TD	Taxodium distichum
	UA	Ulmus americana
SHRUBS		
	AG	Abelia x grandiflora
	HQ	Hydrangea quercifolia
	IC	Ilex cornuta 'Needlepoint'
	IG	Ilex glabra 'Shamrock'
	IVO	Ilex vomitoria
	IVR	Itea virginica
GROUND COVERS		
	POLL	Pollinator Mix

KEY MAP

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NORTH CAROLINA LANDSCAPE ARCHITECT
PRELIMINARY
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NATHAN B. WHITE

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
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REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR DGN: WR	CKD: WR

LANDSCAPE PLAN

L1.06

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PLANT LEGEND

SYMBOL	CODE	BOTANICAL NAME
TREES		
	AR	Acer rubrum
	CC	Cercis canadensis
	CV	Chionanthus virginicus
	NS	Nyssa sylvatica
	PC	Pistacia chinensis
	PO	Platanus occidentalis
	QP	Quercus phellos
	TD	Taxodium distichum
	UA	Ulmus americana
SHRUBS		
	AG	Abelia x grandiflora
	HQ	Hydrangea quercifolia
	IC	Ilex cornuta 'Needlepoint'
	IG	Ilex glabra 'Shamrock'
	IVO	Ilex vomitoria
	IVR	Itea virginica
GROUND COVERS		
	POLL	Pollinator Mix

KEY MAP

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CONSTRUCTION INFRASTRUCTURE DRAWINGS

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NORTH CAROLINA LANDSCAPE ARCHITECT NEIL B. WHITE

PRELIMINARY
NOT APPROVED FOR CONSTRUCTION

0 25 50
SCALE: 1 inch = 50 ft.

INITIAL PLAN DATE: 11/01/2024
REVISIONS:
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REVISED PER REVIEW COMMENTS
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REVISED PER REVIEW COMMENTS

WR JOB NUMBER	23-0045
DRN: WR DGN: WR	CKD: WR

LANDSCAPE PLAN

L1.07

EST. 1903

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LANDSCAPE CALCULATIONS:

PERIMETER BUFFERS

BUFFER TYPE 2 - 25' WIDE
REQUIREMENTS: 3 CANOPY TREES PER 100 LF
1 UNDERSTORY TREE PER 100 LF
50 SHRUBS PER LLF
6' FENCE OR 10 ADDITIONAL SHRUBS PER UDO TABLE 6.2.2.1

BUFFER TYPE 3 - 25' WIDE
REQUIREMENTS: 4 CANOPY TREES PER 100 LF
2 UNDERSTORY TREE PER 100 LF
60 SHRUBS PER 100 LF
6' HT WALL OR 10 ADDITIONAL SHRUBS PER UDO TABLE 6.2.2.1

SEGMENT 'A' 105 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES
2 UNDERSTORY TREES
60 SHRUBS
6' HT WALL
PROVIDED: 4 CANOPY TREES
2 UNDERSTORY TREES
60 SHRUBS
6' HT WALL

SEGMENT 'B' 735 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES PER 100 LF
2 UNDERSTORY TREE PER 100 LF
60 SHRUBS PER 100 LF
6' HT WALL
PROVIDED: 28 CANOPY TREES PER 100 LF
14 UNDERSTORY TREE PER 100 LF
420 SHRUBS PER 100 LF
6' HT WALL

SEGMENT 'C' 3316 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES PER 100 LF
2 UNDERSTORY TREE PER 100 LF
60 SHRUBS PER 100 LF
6' HT WALL
PROVIDED: EXISTING VEGETATION TO REMAIN; TO BE SUPPLEMENTED AS NECESSARY TO ACHIEVE BUFFER STANDARDS

SEGMENT 'D' 378 LF
REQUIRED: 25' WIDE TYPE 2
3 CANOPY TREES PER 100 LF
1 UNDERSTORY TREE PER 100 LF
50 SHRUBS PER 100 LF
6' FENCE
PROVIDED: 12 CANOPY TREES PER 100 LF
4 UNDERSTORY TREE PER 100 LF
200 SHRUBS PER 100 LF
6' FENCE

SEGMENT 'E' 1405 LF
REQUIRED: 25' WIDE TYPE 2
3 CANOPY TREES PER 100 LF
1 UNDERSTORY TREE PER 100 LF
50 SHRUBS PER 100 LF
6' WALL
PROVIDED: 42 CANOPY TREES PER 100 LF
14 UNDERSTORY TREE PER 100 LF
700 SHRUBS PER 100 LF
6' WALL

SEGMENT 'F' 314 LF
REQUIRED: 25' WIDE TYPE 3
3 CANOPY TREES PER 100 LF
1 UNDERSTORY TREE PER 100 LF
50 SHRUBS PER 100 LF
6' FENCE
PROVIDED: 9 CANOPY TREES PER 100 LF
3 UNDERSTORY TREE PER 100 LF
150 SHRUBS PER 100 LF
6' FENCE

SEGMENT 'G' 824 LF
REQUIRED: 25' WIDE TYPE 2
3 CANOPY TREES PER 100 LF
1 UNDERSTORY TREE PER 100 LF
50 SHRUBS PER 100 LF
6' FENCE
PROVIDED: 24 CANOPY TREES PER 100 LF
8 UNDERSTORY TREE PER 100 LF

SEGMENT 'H' 881 LF
REQUIRED: 25' WIDE TYPE 2
3 CANOPY TREES
1 UNDERSTORY TREES
50 SHRUBS
6' FENCE
PROVIDED: 27 CANOPY TREES
9 UNDERSTORY TREES
450 SHRUBS
6' FENCE

SEGMENT 'I' 290 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES
2 UNDERSTORY TREES
60 SHRUBS
6' HT WALL
PROVIDED: 12 CANOPY TREES
6 UNDERSTORY TREES
120 SHRUBS
6' HT WALL

SEGMENT 'J' 952 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES
2 UNDERSTORY TREES
60 SHRUBS
6' HT WALL
PROVIDED: EXISTING VEGETATION TO REMAIN; TO BE SUPPLEMENTED AS NECESSARY TO ACHIEVE BUFFER STANDARDS

SEGMENT 'K' 293 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES
2 UNDERSTORY TREES
60 SHRUBS
6' HT WALL
PROVIDED: EXISTING VEGETATION TO REMAIN; TO BE SUPPLEMENTED AS NECESSARY TO ACHIEVE BUFFER STANDARDS

SEGMENT 'L' 864 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES
2 UNDERSTORY TREES
60 SHRUBS
6' HT WALL
PROVIDED: EXISTING VEGETATION TO REMAIN; TO BE SUPPLEMENTED AS NECESSARY TO ACHIEVE BUFFER STANDARDS

SEGMENT 'M' 182 LF
REQUIRED: 25' WIDE TYPE 3
4 CANOPY TREES
2 UNDERSTORY TREES
60 SHRUBS
6' HT WALL
PROVIDED: EXISTING VEGETATION TO REMAIN; TO BE SUPPLEMENTED AS NECESSARY TO ACHIEVE BUFFER STANDARDS

SEGMENT 'N' 562 LF
REQUIRED: 30' WIDE STREETSCAPE BUFFER
14 TREES (1 TREE PER 40)
PROVIDED: 15 TREES

SEGMENT 'O' 456 LF
REQUIRED: 30' WIDE STREETSCAPE BUFFER
12 TREES (1 TREE PER 40)
PROVIDED: 12 TREES

SEGMENT 'P' 663 LF
REQUIRED: 50' WIDE STREETSCAPE BUFFER
17 TREES (1 TREE PER 40)
PROVIDED: 17 TREES

SEGMENT 'Q' 455 LF
REQUIRED: 30' WIDE STREETSCAPE BUFFER
11 TREES (1 TREE PER 40)
PROVIDED: 11 TREES

BUFFER PLANT SYMBOL KEY:

CANOPY TREES:

QPH - QUERCUS PHELLOS

ABU - ACER BUERGERIANUM

UNDERSTORY TREES:

MVI - MAGNOLIA VIRGININA

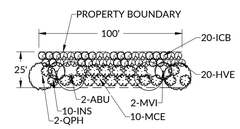
SHRUBS

ICB - ILEX CORNUTA 'BURFORDII NANA'

HVE - HAMAMELIS VERNALIS

INS - ILEX x 'NELLIE R. STEVENS'

MCE - MYCERA CERIFERA



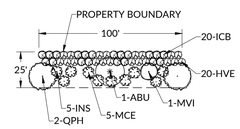
25' PERIMETER BUFFER TYPE 3 - TYPICAL 100' SECTION

THIS DETAIL IS TO BE USED IF SUPPLEMENTAL PLANTING IS REQUIRED IN BUFFER

PLANTING REQUIREMENTS:
4 CANOPY TREES PER 100 LF
2 UNDERSTORY TREE PER 100 LF
60 SHRUBS PER 100 LF
6' HT WALL OR 10 ADDITIONAL SHRUBS PER 100 LF PER UDO TABLE 6.2.2.1

*NO SINGLE SPECIES SHALL COMPRISE MORE THAN 50% OF PLANT TYPE IN BUFFERS

NOTE: REFER TO TYPICAL BUFFER DETAIL WHERE SUPPLEMENTAL PLANTING IS REQUIRED IN LIEU OF EXISTING VEGETATION. AREAS OF MATURE EXISTING VEGETATION ARE TO REMAIN IN ORDER TO MEET THE BUFFER REQUIREMENTS. DURING CONSTRUCTION, A SITE INSPECTION BY THE LDA WILL DETERMINE IF THE EXISTING VEGETATION MEETS THE REQUIRED MINIMUM LANDSCAPING.



25' PERIMETER BUFFER TYPE 2 - TYPICAL 100' SECTION

THIS DETAIL IS TO BE USED IF SUPPLEMENTAL PLANTING IS REQUIRED IN BUFFER

PLANTING REQUIREMENTS:
3 CANOPY TREES PER 100 LF
1 UNDERSTORY TREE PER 100 LF
50 SHRUBS PER 100 LF
6' FENCE OR 10 ADDITIONAL SHRUBS PER 100 LF PER UDO TABLE 6.2.2.1

*NO SINGLE SPECIES SHALL COMPRISE MORE THAN 50% OF PLANT TYPE IN BUFFERS

NOTE: TYPICAL BUFFER DETAIL IS INTENDED FOR WHERE SUPPLEMENTAL PLANTING IS REQUIRED IN LIEU OF EXISTING VEGETATION. IN AREAS OF EXISTING MATURE VEGETATION THAT EXISTING PLANT MATERIAL SHALL BE USED TO FULLY MEET THE BUFFER REQUIREMENTS.

LANDSCAPE CALCULATIONS:

STREET TREES

REQUIREMENTS: SHADE TREES 40' OC OR UNDERSTORY TREES 20' OC

DARE DR 252 LF
REQUIRED: 6.3 SHADE TREES
PROVIDED: 7 SHADE TREES

DELACROIX DR : 1672 LF
REQUIRED: 41.8 SHADE TREES
PROVIDED: 42 SHADE TREES

TITIAN AVE: 1675 LF
REQUIRED: 41.8 SHADE TREES
PROVIDED: 42 SHADE TREES

MUNCH DR: 1826 LF
REQUIRED: 45.7 SHADE TREES
PROVIDED: 46 SHADE TREES

WARHOL CT: 140 LF
REQUIRED: 3.5 SHADE TREES
PROVIDED: 4 SHADE TREES

SEURAT PL: 178 LF
REQUIRED: 4.45 SHADE TREES
PROVIDED: 5 SHADE TREES

PICASSO DR: 178 LF
REQUIRED: 4.45 SHADE TREES
PROVIDED: 5 SHADE TREES

BEARDEN ST: 1188 LF
REQUIRED: 29.7 SHADE TREES
PROVIDED: 30 SHADE TREES

RODIN WAY: 640 LF
REQUIRED: 16 SHADE TREES
PROVIDED: 16 SHADE TREES

SISLEY PL: 543 LF
REQUIRED: 13.6 SHADE TREES
PROVIDED: 14 SHADE TREES

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER		QTY
TREES						
	AR	Acer rubrum / Red Maple	3"CAL., 12' HT MIN	B&B		20
	CC	Cercis canadensis / Eastern Redbud Multi-trunk	6` Ht.	B&B		23
	CV	Chionanthus virginicus / White Fringetree	6` Ht.	B&B		17
	NS	Nyssa sylvatica / Tupelo	3"CAL., 12' HT MIN	B&B		36
	PC	Pistacia chinensis / Chinese Pistache	3"CAL., 12' HT MIN	B&B		78
	PO	Platanus occidentalis / American Sycamore	3"CAL., 12' HT MIN	B&B		69
	QP	Quercus phellos / Willow Oak	3"CAL., 12' HT MIN	B&B		98
	TD	Taxodium distichum / Bald Cypress	3"CAL., 12' HT MIN	B&B		29
	UA	Ulmus americana / American Elm	3"CAL., 12' HT MIN	B&B		30
SHRUBS						
	AG	Abelia x grandiflora / Glossy Abelia	24" HT. MIN.	CONT.		174
	HQ	Hydrangea quercifolia / Oakleaf Hydrangea	7 gal.	CONT.		133
	IC	Ilex cornuta 'Needlepoint' / Needlepoint Chinese Holly	24" HT. MIN.	CONT.		98
	IG	Ilex glabra 'Shamrock' / Shamrock Inkberry Holly	24" HT. MIN.	CONT.		95
	IVO	Ilex vomitoria / Yaupon Holly	24" HT. MIN.	CONT.		89
	IVR	Itea virginica / Virginia Sweetspire	24" HT. MIN.	CONT.		124
SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	SPACING	QTY
GROUND COVERS						
	POLL	Pollinator Mix / Coreopsis, Echinacea, Rudbeckia	4" POT MIN.		24" o.c.	2,418

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DRN: WR DGN: WR CKD: WR

LANDSCAPE DETAILS

L1.08

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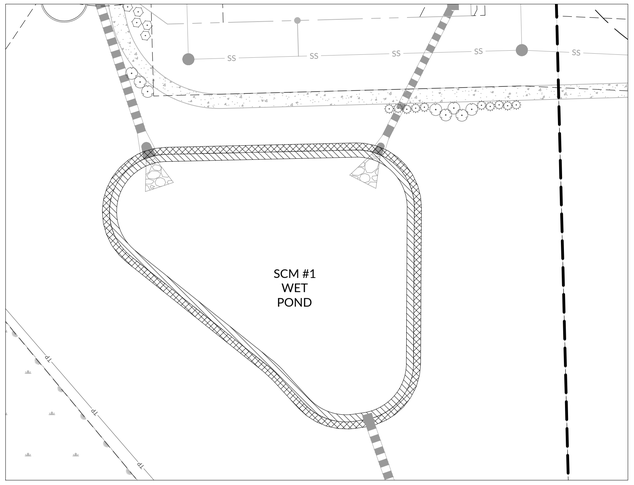

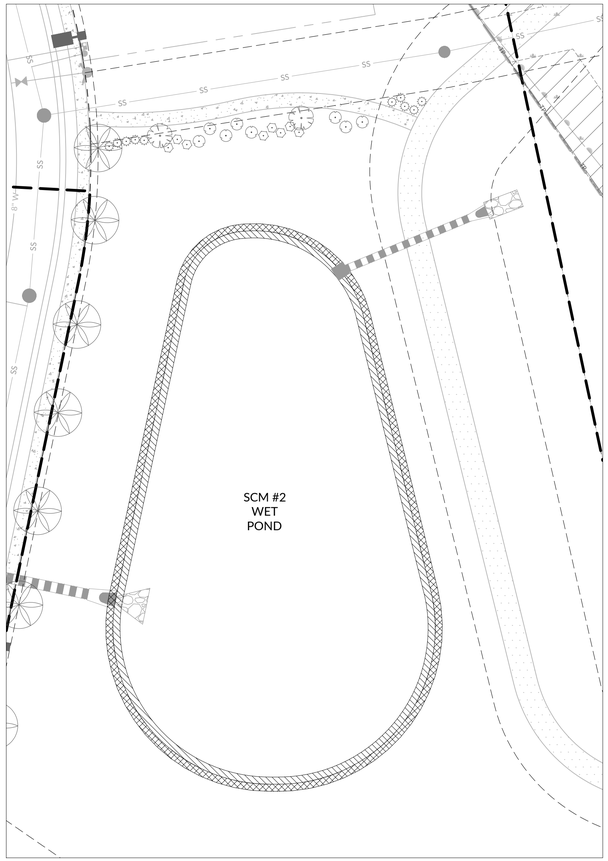

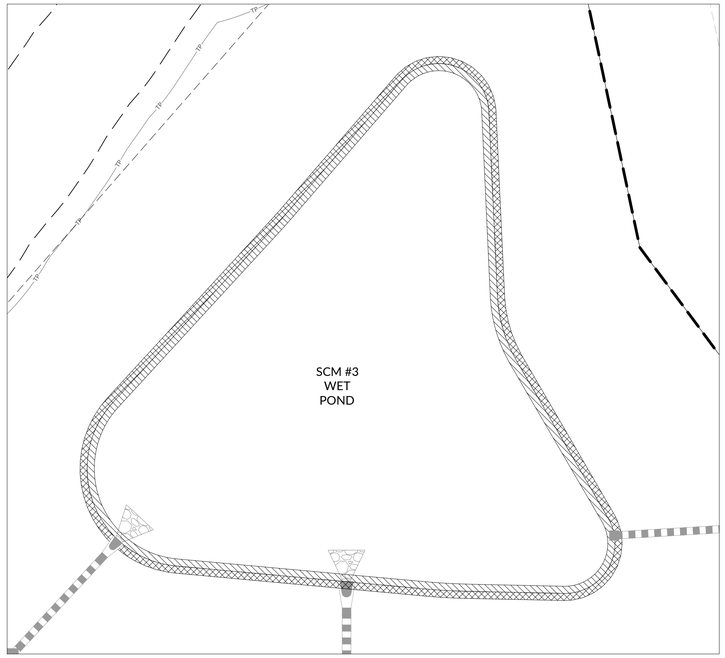

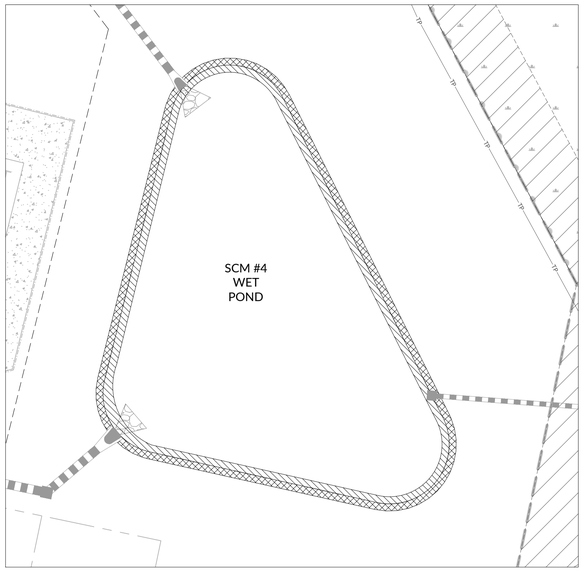

LEGEND:

SHALLOW LAND VEGETATIVE SHELF

SHALLOW WATER VEGETATIVE SHELF

SCM LANDSCAPE NOTES:

1. ON THE DAM AND DAM EMBANKMENT SLOPES, TURF GRASS PROVIDES STABILITY AND ENHANCES ACCESS TO THE FACILITY FOR MAINTENANCE. DEQ RECOMMENDS PERENNIAL GRASSES SUCH AS HYBRID BERMUDA OR CENTIPEDE IN THE COASTAL PLAIN AND PIEDMONT, AND COOL SEASON TURF GRASS SUCH AS FESCUE AND BLUEGRASS IN THE MOUNTAINS. WEEPING LOVE GRASS IS NOT ALLOWED BECAUSE IT DOES NOT PROVIDE LONG TERM SLOPE STABILIZATION.
2. THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS; TREES AND SHRUBS SHALL NOT BE ALLOWED.
3. THE VEGETATED SHELF SHALL BE PLANTED WITH A MINIMUM OF THREE (3) DIVERSE SPECIES OF HERBACEOUS, NATIVE VEGETATION AT A MINIMUM DENSITY OF 50 PLANTS PER 200 SQUARE FEET OF SHELF AREA.

SCM PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	NOTES
WET POND - SCM #1						
SHALLOW LAND =	**1216**	**SF W/ 50 HERB. PLANTS/200 SF =**	**304**			
AAM	76	Acorus americanus	Sweetflag	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
AIN	76	Asclepias incarnata	Butterfly Milkweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNE	76	Juncus effusus	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
EDU	76	Eupatorium dubius	Dwarf Joe Pye Weed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SHALLOW WATER	**1170**	**SF W/ 50 HERB. PLANTS/200 SF =**	**296**			
SGL	74	Sagittaria latifolia	Broadleaf Arrowhead	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
PNC	74	Pontedaria cordata	Pickerelweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SAC	74	Saururus cernuus	Lizard's Tail	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNB	74	Juncus effusus 'Blue Arrow'	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
Note: 'Shared coverage' means that the species will be evenly interspersed on their designated shelf across a single 24" OC square grid.						
WET POND - SCM #2						
KEY	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**ROOT**	**SIZE**	**NOTES**
SHALLOW LAND =	**1790**	**SF W/ 50 HERB. PLANTS/200 SF =**	**448**			
AAM	112	Acorus americanus	Sweetflag	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
AIN	112	Asclepias incarnata	Butterfly Milkweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNE	112	Juncus effusus	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
EDU	112	Eupatorium dubius	Dwarf Joe Pye Weed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SHALLOW WATER	**1756**	**SF W/ 50 HERB. PLANTS/200 SF =**	**440**			
SGL	110	Sagittaria latifolia	Broadleaf Arrowhead	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
PNC	110	Pontedaria cordata	Pickerelweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SAC	110	Saururus cernuus	Lizard's Tail	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNB	110	Juncus effusus 'Blue Arrow'	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
Note: 'Shared coverage' means that the species will be evenly interspersed on their designated shelf across a single 24" OC square grid.						
WET POND - SCM #3						
KEY	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**ROOT**	**SIZE**	**NOTES**
SHALLOW LAND =	**2155**	**SF W/ 50 HERB. PLANTS/200 SF =**	**540**			
AAM	135	Acorus americanus	Sweetflag	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
AIN	135	Asclepias incarnata	Butterfly Milkweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNE	135	Juncus effusus	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
EDU	135	Eupatorium dubius	Dwarf Joe Pye Weed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SHALLOW WATER	**2108**	**SF W/ 50 HERB. PLANTS/200 SF =**	**528**			
SGL	132	Sagittaria latifolia	Broadleaf Arrowhead	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
PNC	132	Pontedaria cordata	Pickerelweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SAC	132	Saururus cernuus	Lizard's Tail	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNB	132	Juncus effusus 'Blue Arrow'	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
Note: 'Shared coverage' means that the species will be evenly interspersed on their designated shelf across a single 24" OC square grid.						
WET POND - SCM #4						
KEY	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**ROOT**	**SIZE**	**NOTES**
SHALLOW LAND =	**1578**	**SF W/ 50 HERB. PLANTS/200 SF =**	**396**			
AAM	99	Acorus americanus	Sweetflag	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
AIN	99	Asclepias incarnata	Butterfly Milkweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNE	99	Juncus effusus	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
EDU	99	Eupatorium dubius	Dwarf Joe Pye Weed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SHALLOW WATER	**1599**	**SF W/ 50 HERB. PLANTS/200 SF =**	**400**			
SGL	100	Sagittaria latifolia	Broadleaf Arrowhead	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
PNC	100	Pontedaria cordata	Pickerelweed	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
SAC	100	Saururus cernuus	Lizard's Tail	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNB	100	Juncus effusus 'Blue Arrow'	Soft Rush	CONT.	2.25" PLUG (32'S)	MIN. 24" O.C. 25% SHARED COVERAGE
Note: 'Shared coverage' means that the species will be evenly interspersed on their designated shelf across a single 24" OC square grid.						

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CONSTRUCTION INFRASTRUCTURE DRAWINGS

BROADMOOR
CID-24-06

ROLESVILLE ROAD | ROLESVILLE, NC 27587 | WAKE COUNTY

NORTH CAROLINA LANDSCAPE ARCHITECT
NEIL B. WHITT

PRELIMINARY
NOT APPROVED FOR
CONSTRUCTION

0 15 30
SCALE: 1 inch = 30 ft.

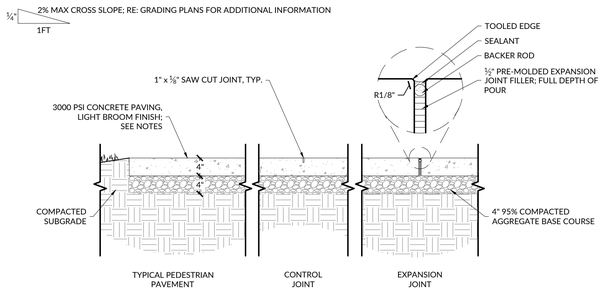
INITIAL PLAN DATE: 11/01/2024
REVISIONS:
1 - 01/02/2025
REVISED PER REVIEW COMMENTS
2 - 03/03/2025
REVISED PER REVIEW COMMENTS

WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

SCM PLANTING PLAN

L1.09

j:\2310045-pulte_woodlief assemblage\CAD\drawing sets\construction\L1.08 SCM Planting Plans.dwg - Thursday, February 27, 2025 5:40:35 PM - JKEITH



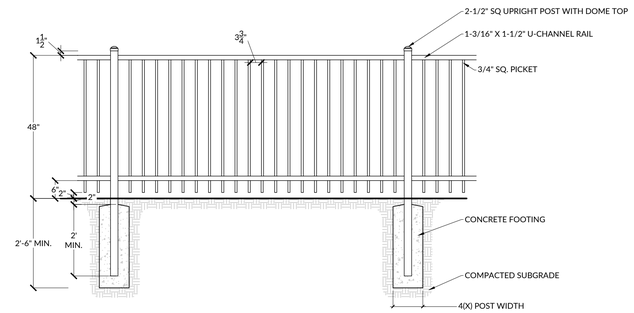
NOTES:

1. PROVIDE EXPANSION JOINT WHERE WALKS ARE POURED AGAINST VERTICAL SURFACES AND/OR DIFFERENT PAVING MATERIALS & AS SPECIFIED ON PLANS OR 25'-0" MAX O.C.
2. PROVIDE CONTRACTION JOINT AT 5' INTERVALS UNLESS OTHERWISE SPECIFIED (SEE PLAN).
3. CONTRACTOR TO PROVIDE MOCK-UP OF CONCRETE FINISH, COLOR, AND SCORING FOR OWNERS APPROVAL. MOCK-UP CAN BE USED AS PART OF FINAL PROJECT.

1 CONCRETE PAVING — SECTION

SCALE: 3/4" = 1'-0"

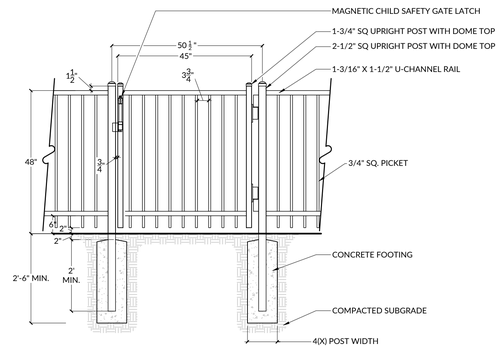
NOTES
1. COLOR: BLACK
2. DETAIL SPECIFICS MAY DEVIATE BASED ON FENCE PRODUCT SELECTED BY CONTRACTOR. THIS DETAIL PROVIDES DESIGN INTENT ONLY.
3. FENCE HEIGHT AND COLOR SHALL REMAIN AS SPECIFIED



2 FENCE TYPE 1 — SECTION

SCALE: 1/2" = 1'-0"

NOTES
1. COLOR: BLACK
2. DETAIL SPECIFICS MAY DEVIATE BASED ON GATE PRODUCT SELECTED BY CONTRACTOR. THIS DETAIL PROVIDES DESIGN INTENT ONLY.
3. GATE HEIGHT AND COLOR SHALL REMAIN AS SPECIFIED



3 GATE TYPE 1 — SECTION

SCALE: 1/2" = 1'-0"

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NORTH CAROLINA LANDSCAPE ARCHITECT
PRELIMINARY
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DANIEL B. WHITE

INITIAL PLAN DATE: 11/01/2024
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2 - 03/03/2025
REVISED PER REVIEW COMMENTS
-
-

WR JOB NUMBER		23-0045
DRN: WR	DGN: WR	CKD: WR

AMENITY DETAILS

L9.00

EST. 1993

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LUMINAIRE SCHEDULE								
CALLOUT	SYMBOL	LAMP	DESCRIPTION	BALLAST	MOUNTING	MODEL	VOLTS	QUANTITY
RDWY		(1) 75W LED Array, LED	ATB0 SERIES 73W LED 1050MA TYPE 2 4000K CCT	ELECTRONIC	30' POLE	American Electric Lighting, ATB0 ROADWAY LED	120V 1P 2W	79

PHASE	# OF POLES	POLE #
PHASE 1	38 POLES	(1-38)
PHASE 2	21 POLES	(39-59)
PHASE 3	20 POLES	(60-79)
TOTAL	79 POLES	

Roadway Lighting	
AVERAGE FOOT-CANDLES	0.61
MAXIMUM FOOT-CANDLES	1.4
MINIMUM FOOT-CANDLES	0.2
MINIMUM TO MAXIMUM FC RATIO	0.11
MAXIMUM TO MINIMUM FC RATIO	8.88
AVERAGE TO MINIMUM FC RATIO	3.95

DUKE ENERGY. PROGRESS

Outdoor Lighting

Roadway LED

light distribution pattern

Light source: LED *(white)*
Lumens: 4,807 – 25,050 *(fixture dependent)*

Wattage	Light Pattern	IESNA Backlight-Uplight – Glare (BUG) Rating
LED 50	IESNA Type III *(medium oval)*	B1-U0-G1
LED 75	IESNA Type II *(long oval)*	B1-U0-G2
LED 105	IESNA Type II *(long oval)*	B2-U0-G2
LED 150	IESNA Type III *(medium oval)*	B2-U0-G2
LED 215	IESNA Type III *(medium oval)*	B3-U0-G3
LED 280	IESNA Type III *(medium oval)*	B3-U0-G4

Color temperature: 4,000K
Warm-up and restrike time: Instant on *(no warm-up or restrike time)*

Poles available:

Name	Mounting height	Color
Fiberglass	29' 37' 39'	Gray
Fiberglass	29', 30', 39'	Black *(additional cost)*
Wood	29', 30', 39'	Standard
Metal *(special conditions)**	29', 30', 39'	Gray

Features	Benefits
Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance included	Eliminates high and unexpected repair bills
Electricity included	Less expensive than metered service
Warranty included	Worry-free
One low monthly cost on your electric bill	Convenience and savings for you
Turnkey operation	Provides hassle-free installation and service
Backed by over 40 years of experience	A name you can trust today ... and tomorrow

**2' raised foundation available when required.*

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DUKE ENERGY. PROGRESS

Outdoor Lighting

Roadway LED

The Roadway LED is a green solution and great fit for streets, roads, long, narrow areas and parking lots. This energy-efficient luminaire delivers the light where it is needed while increasing visibility and reducing spill light to adjoining properties. Choose low to medium light output on wood or fiberglass poles (or mount on an existing pole). Available with one to four fixtures per pole, depending on the fixture/pole combination selected.

LED *(Light Emitting Diode)*	50 | 75 | 105 | 150 | 215 | 280 watts
Mounting heights	29' 37' 39'
Color	Gray | Black
Poles	Fiberglass | Metal *(special conditions)* | Wood

For additional information, visit us at **duke-energy.com/Outdoor/Lighting** or call us toll free at **866.769.6417**.

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NORTH CAROLINA LANDSCAPE ARCHITECT
PRELIMINARY
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MEL B. WHITT

0 100 200
SCALE: 1 inch = 200 ft.

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WR JOB NUMBER 23-0045
DRN: WR DGN: WR CKD: WR

LIGHTING EXHIBIT

SL1.00

J:\23\0045-public_workflow\assemblage\CAD\drawing sets\construction\SL1.00 LIGHTING PLAN.dwg Thursday, February 27, 2025 5:41:48 PM - JKEITH